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FRESH-WATER ALGÆ.

EXCLUSIVE OF

DESMIDEÆ AND DIATOMACEÆ.

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BY

M. C. COOKE, M.A., LL.D., A.L.S.,

Author of "Handbook of British Fungi," "Mycographia," "Illustrations of British Fungi," &c., &c.

I. PALMELLACEÆ.

WILLIAMS AND NORGATE,
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LEIPZIG: F. A. BROCKHAUS. NEW YORK: WESTERMANN & CO.

1882.

H. W. BURLEY, PRINTER, JAMES.

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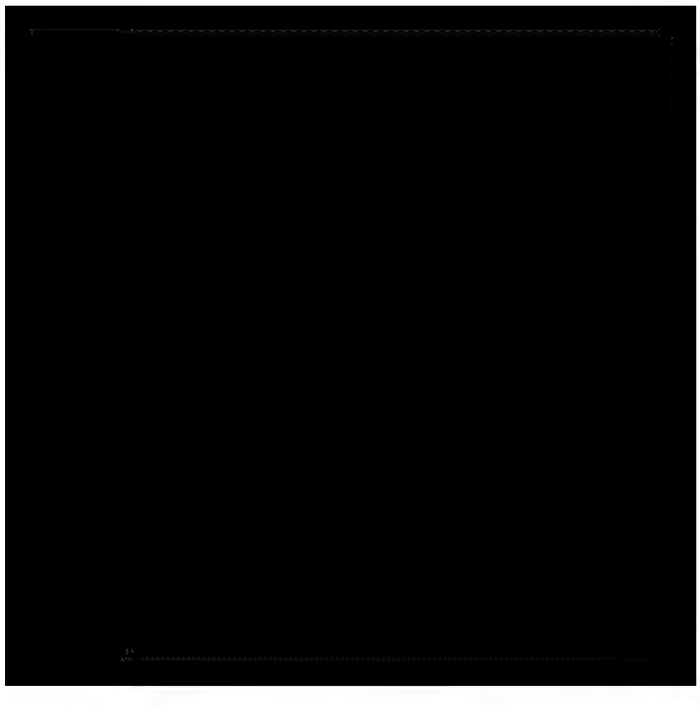
VOL. II.



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Eremosphæra viridis DBy.

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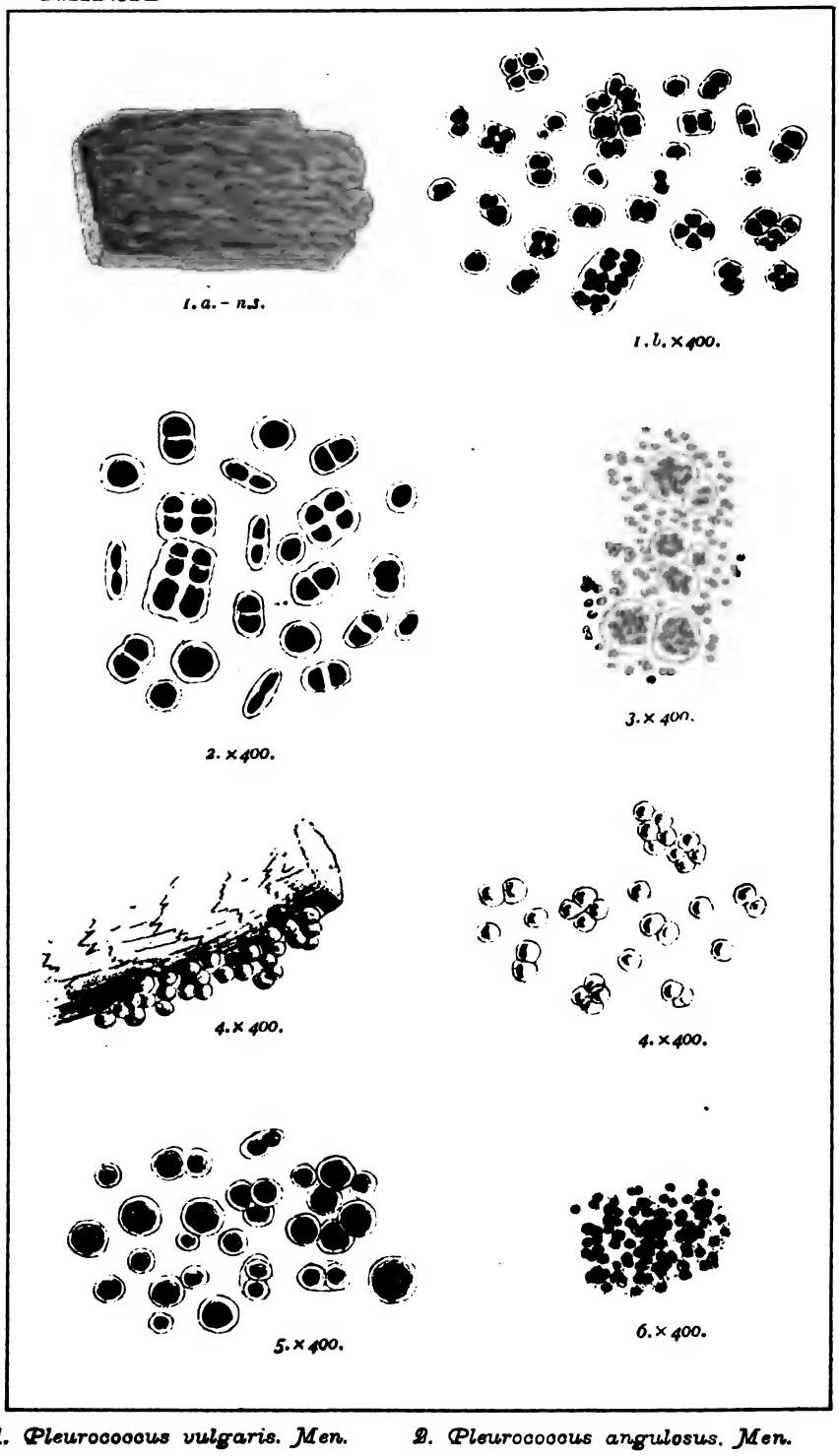

1. *Pleurococcus vulgaris. Men.*
2. *Pleurococcus angulosus. Men.*
3. *Pleurococcus mucosus. Kutz.*
4. *Pleurococcus Beigelii. Kuch.*
5. *Pleurococcus miniatus. Kutz.*
6. *Pleurococcus roseo-persicinus. Kutz*

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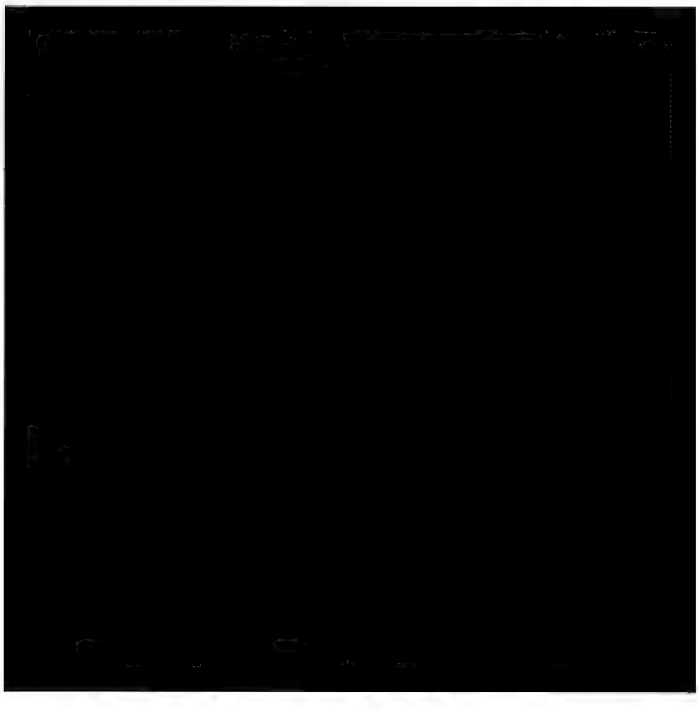
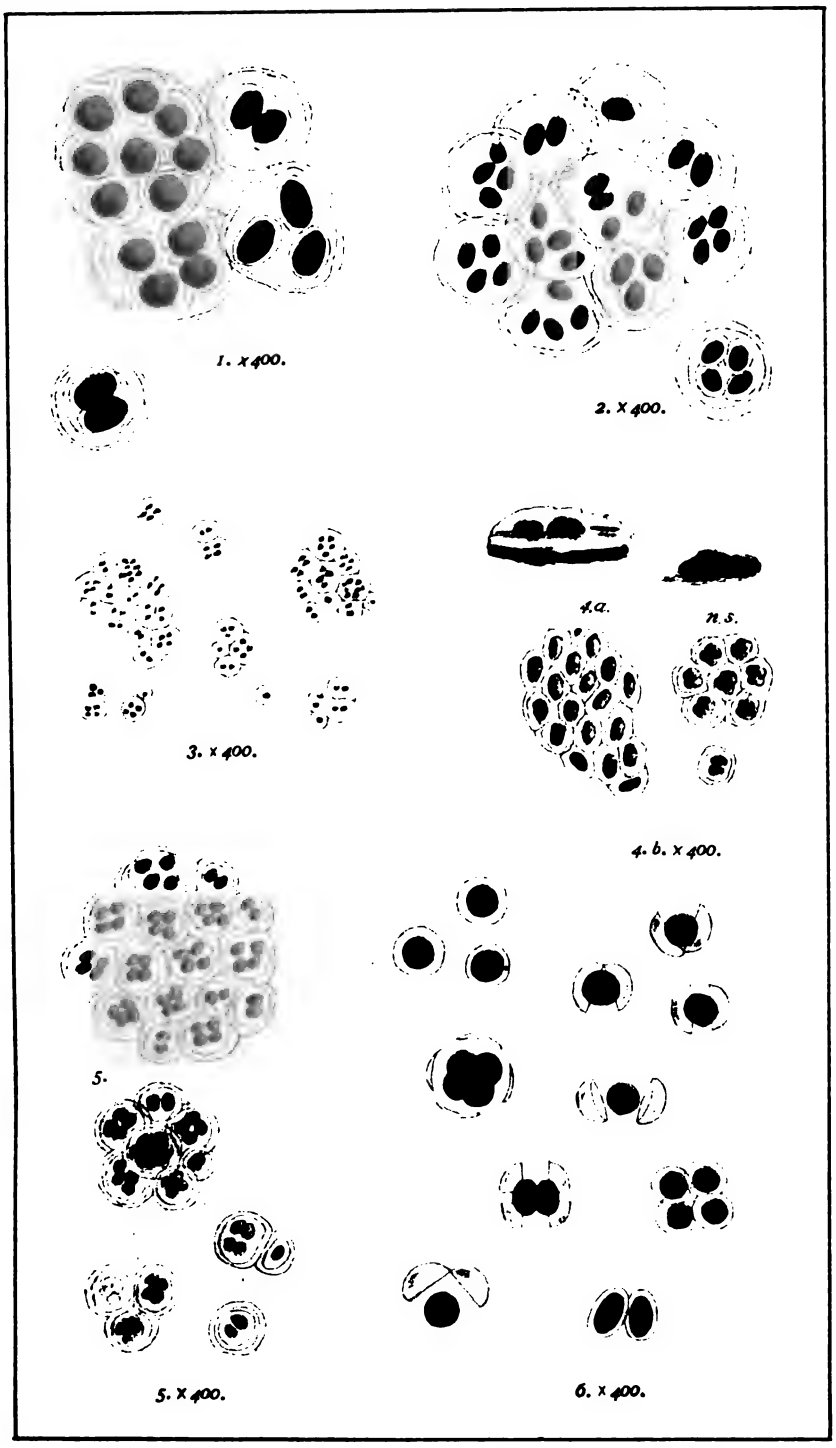
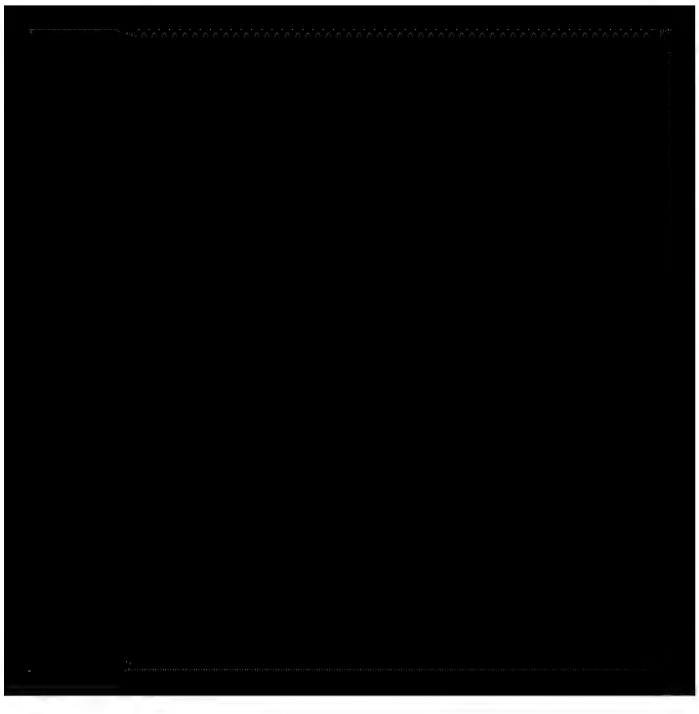
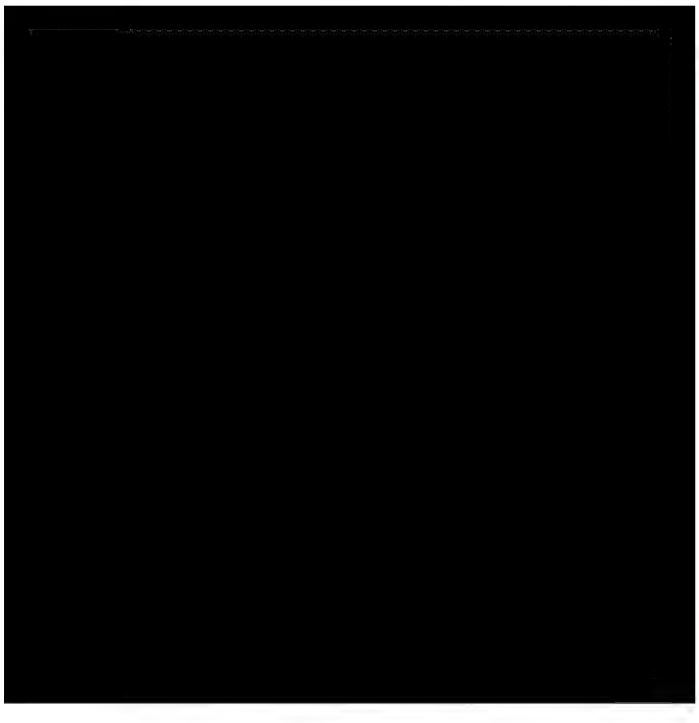
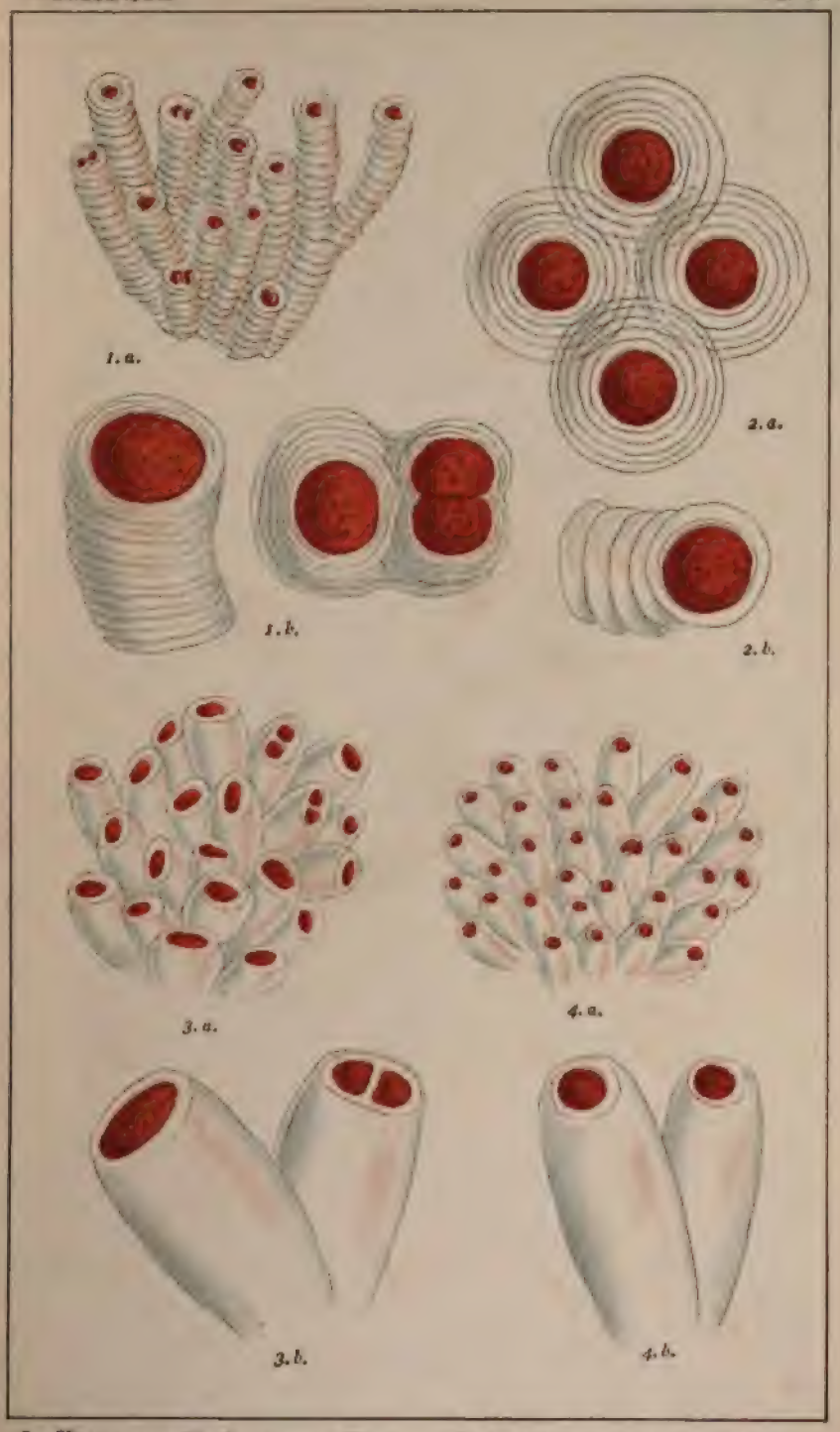




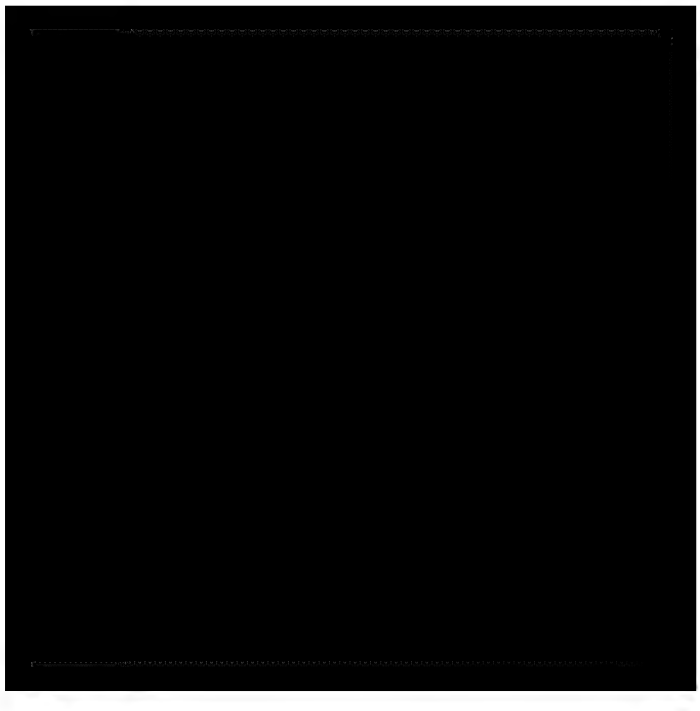
1. *Glœocystis ampla. Kutz.*
2. *Glœocystis vesiculosa. Nag.*
3. *Glœocystis botryoides. Kutz.*
4. *Glœocystis adnata.* Huds.
5. *Glœocystis Paroliniana. Nag.*
6. *Schizochlamys gelatinosa.* Br.

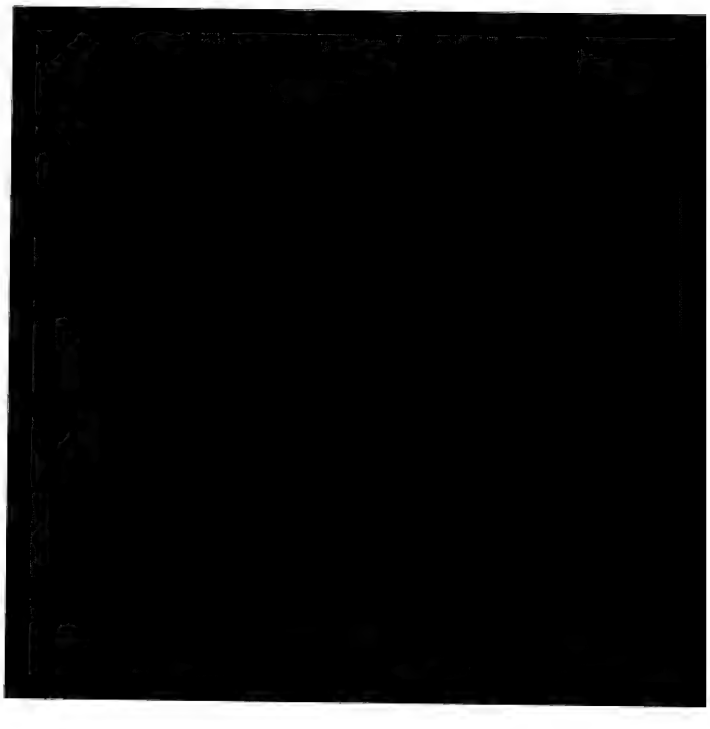






1. *Urococcus Hookerianus*, Hass. 2. *Urococcus insignis* Hass.
3. *Urococcus Allmanni* Hass. 4. *Urococcus cryptophilus*. Hass.





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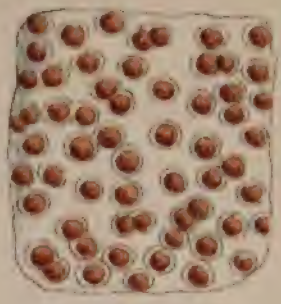
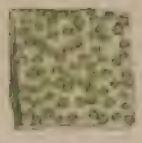


2. × 400.

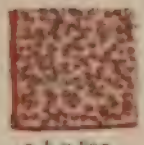
3. a. × 400.



3. b. × 800.

4. a. – n.s.

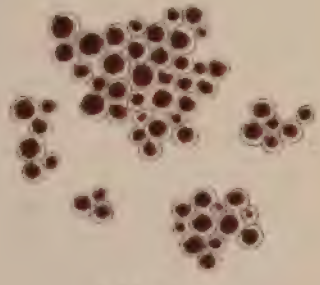
5. a. × 400.



5. b. × 800.

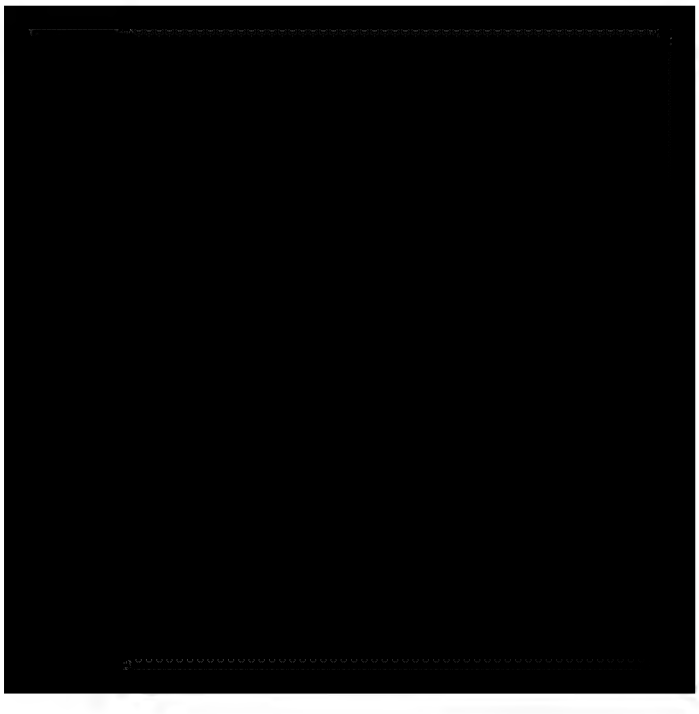
4. b. × 400.

6. a. – n.s.



6. b. × 400.

1. *Palmella mucosa. Kutz.*
2. *Palmella miniata. v. æqualis. Nog.*
3. *Palmella hyalina. Breb.*
4. *Palmella Mobreana. Haru.*
5. *Palmella prodigiosa. Elor.*
6. *Porphyridium cruentum. Ag.*



1. *Tetraspora bullosa Ag.* 2. Tetraspora gelatinosa Desv.
3. *Tetraspora lubrica Ag.* 4. Tetraspora flava Hass.

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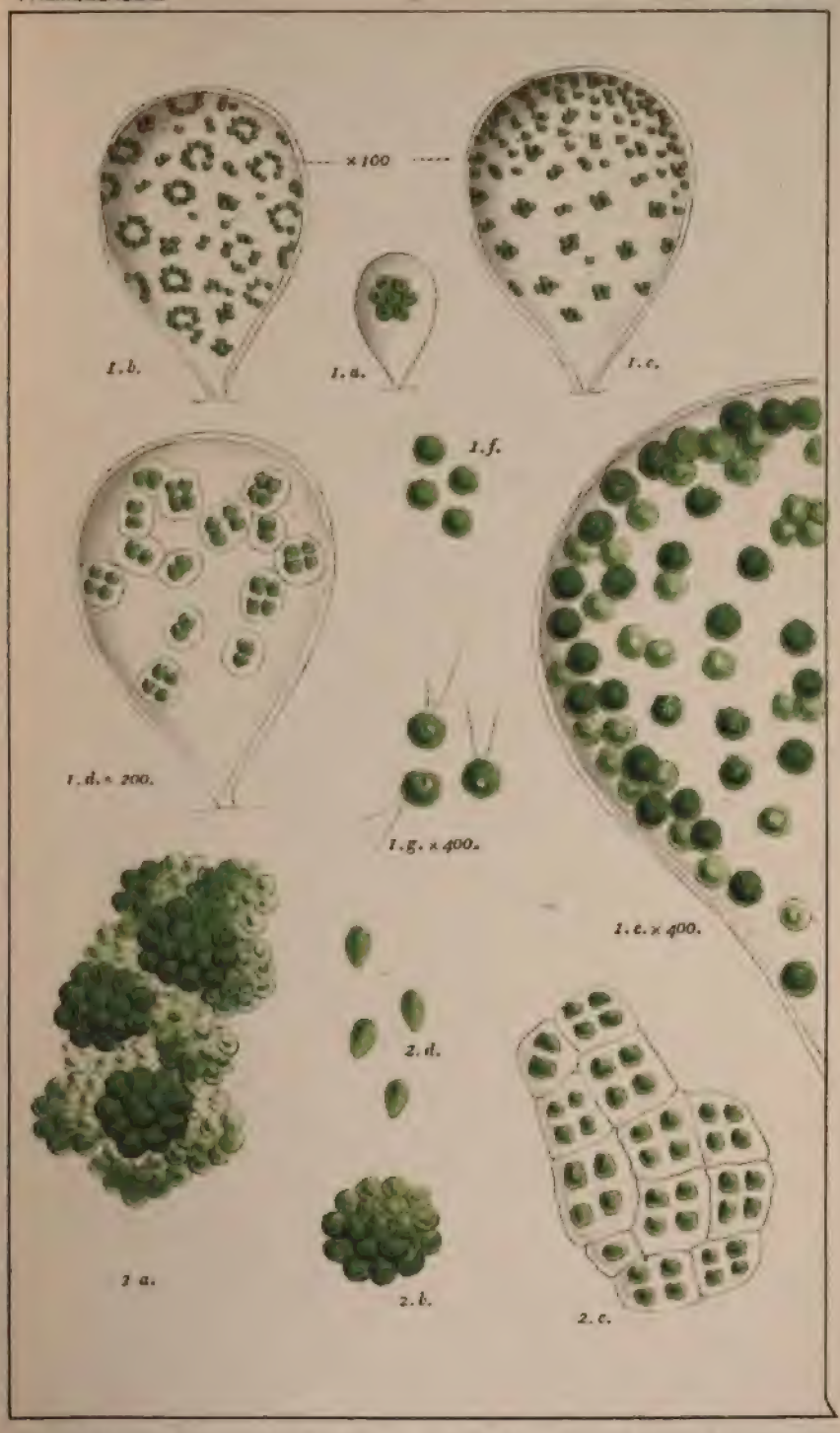

1. *Aphanocystis Brauniana. Nag.* 2. *Botryococcus Braunii. Kutz.*

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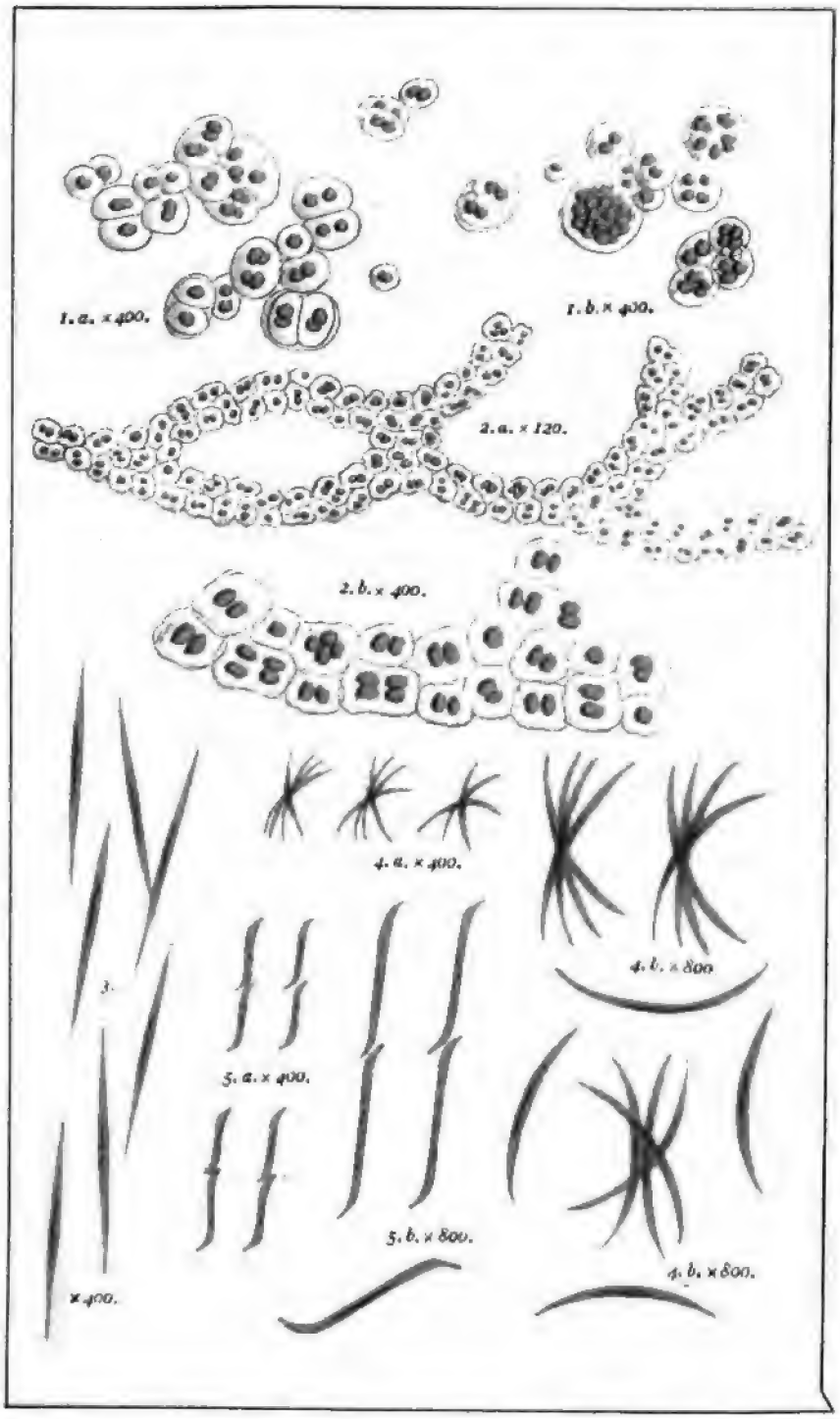

1. *Glœocystis rupestris. Lyng.* 2. *Palmodictyon viride. Kutz.*
3. *Rhaphidium acicular Br.* 4. *Rhaphidium falcatum. Rabh.*

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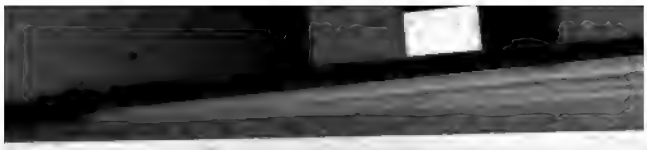

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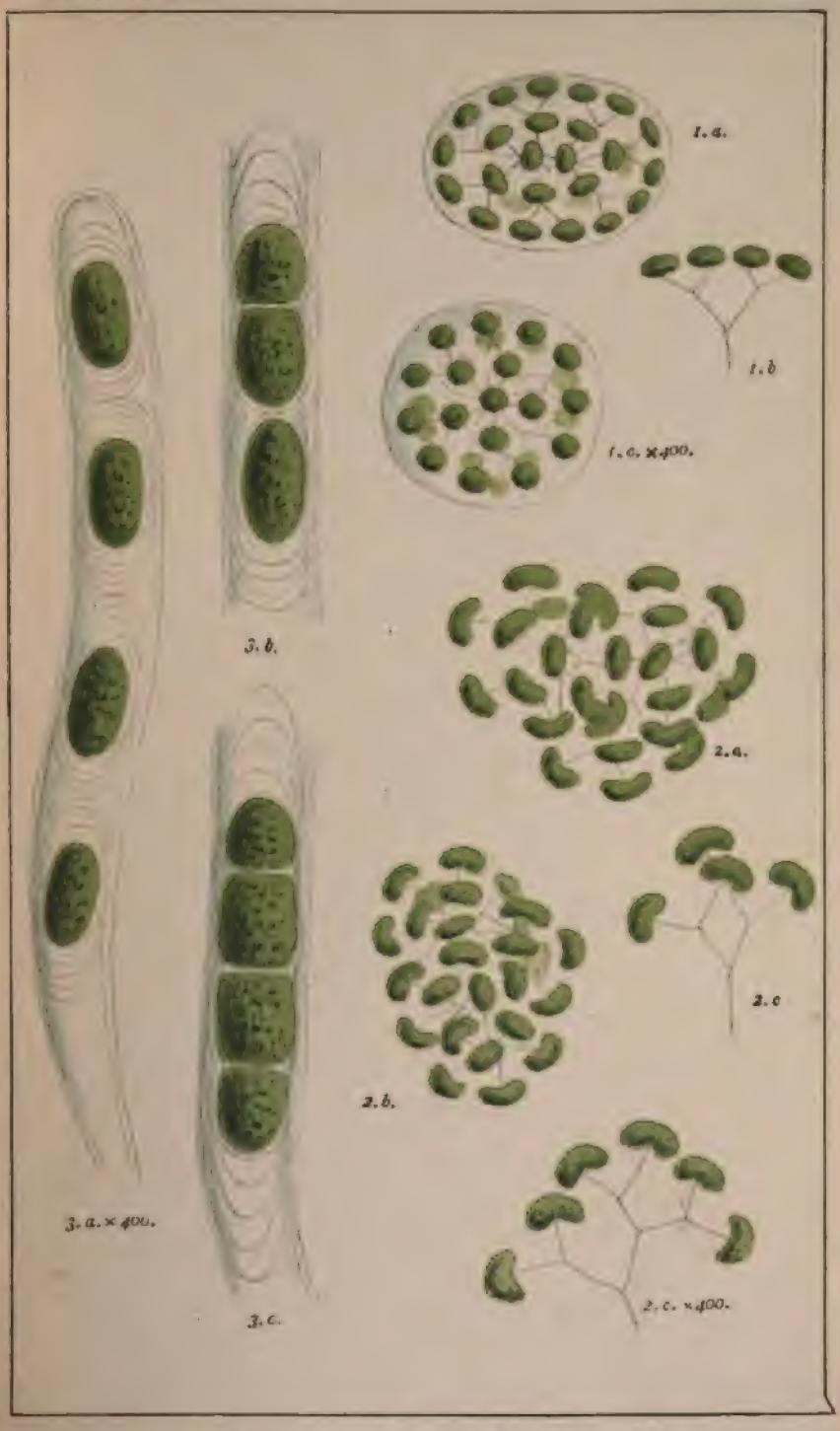
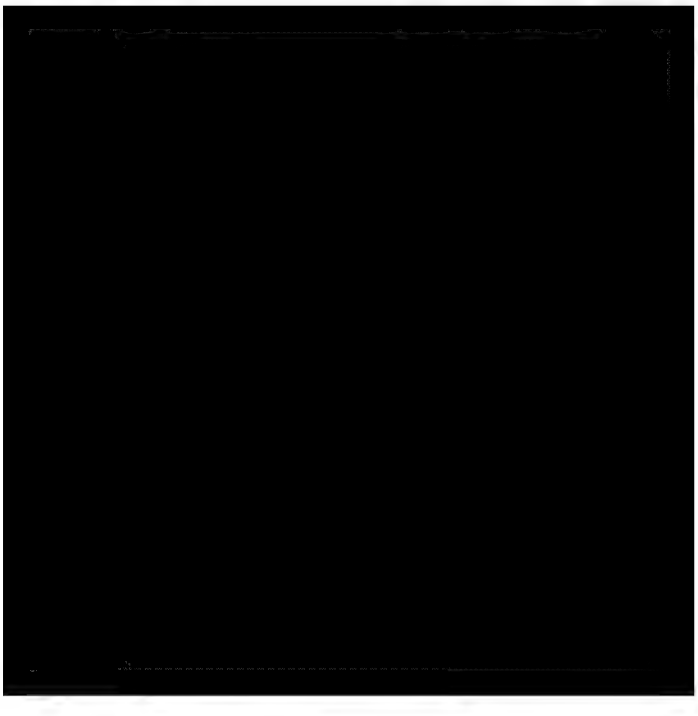


1. *Dictyosphærium Ehrenbergianum. Nag.*
2. *Dictyosphærium reniforme. Bulr.*



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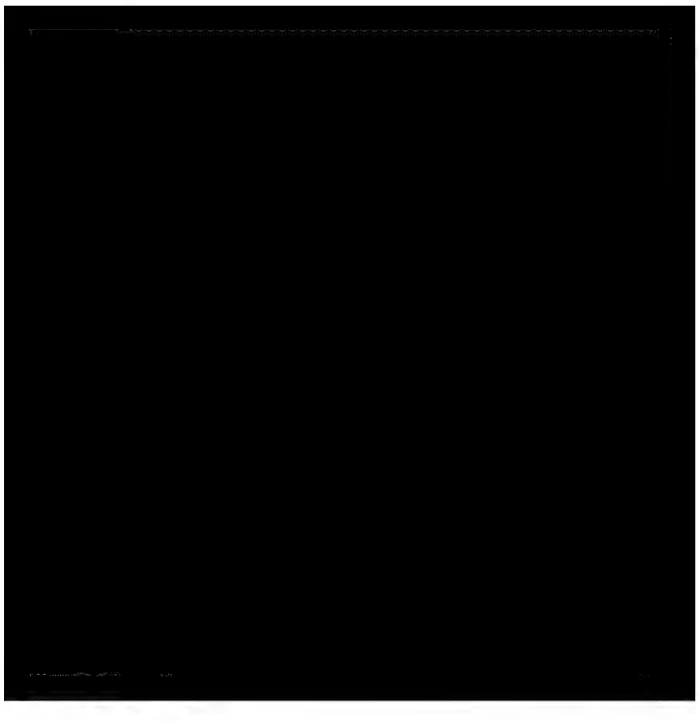
1. *Hormospora mutabilis. Breb.*
2. Hormospora ramosa. Thw.
3. *Hormospora transversalis. Breb.*
4. Hydrurus penicillatus. Ag.



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1. *Nephrocytium Agardhianum. Nag.* 2. *Nephrocytium Naegelii. Gr.*
3. *Botrydina vulgaris. Breb.* 4. *Micrococcus conferviola. Nag.*

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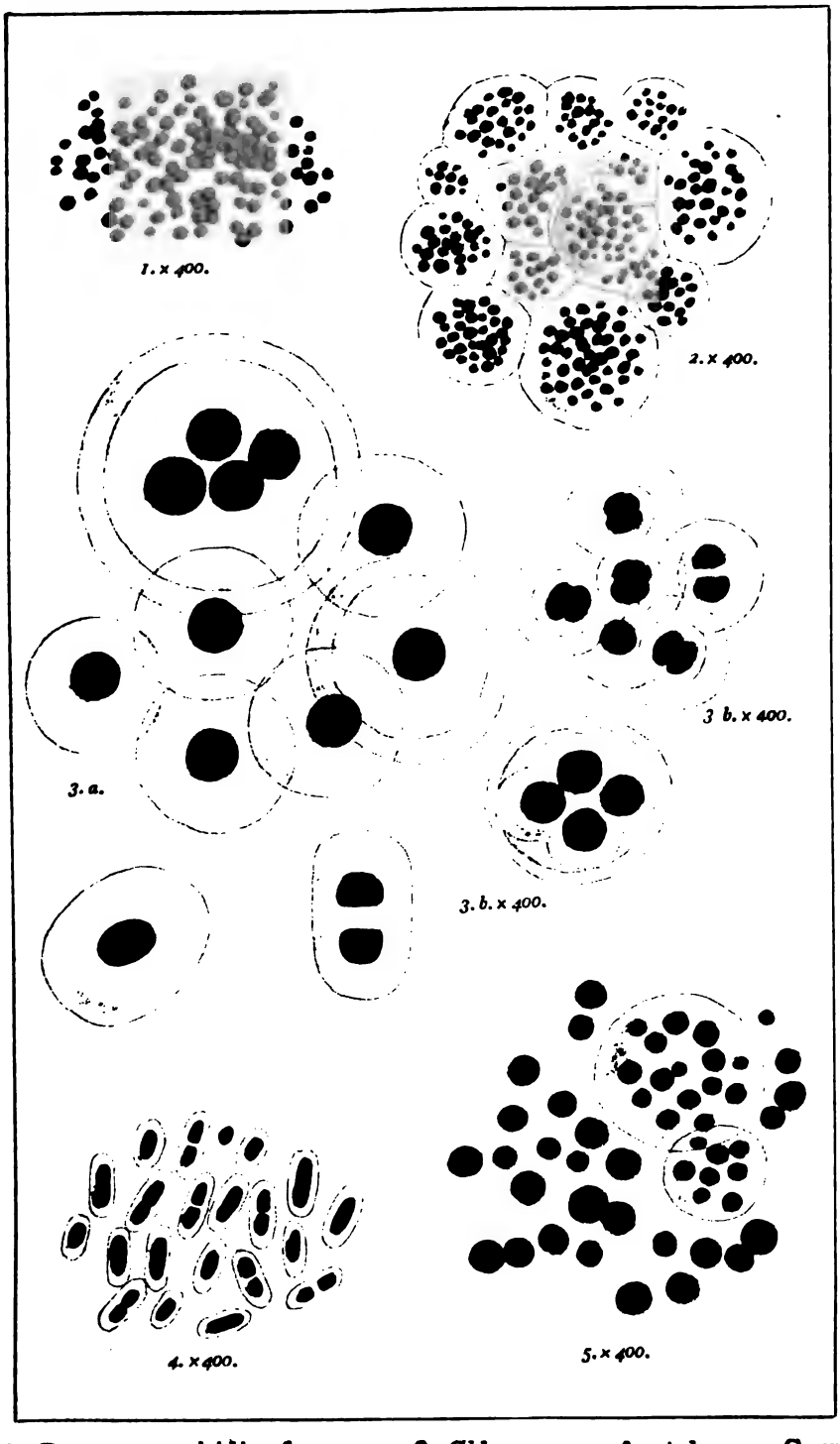
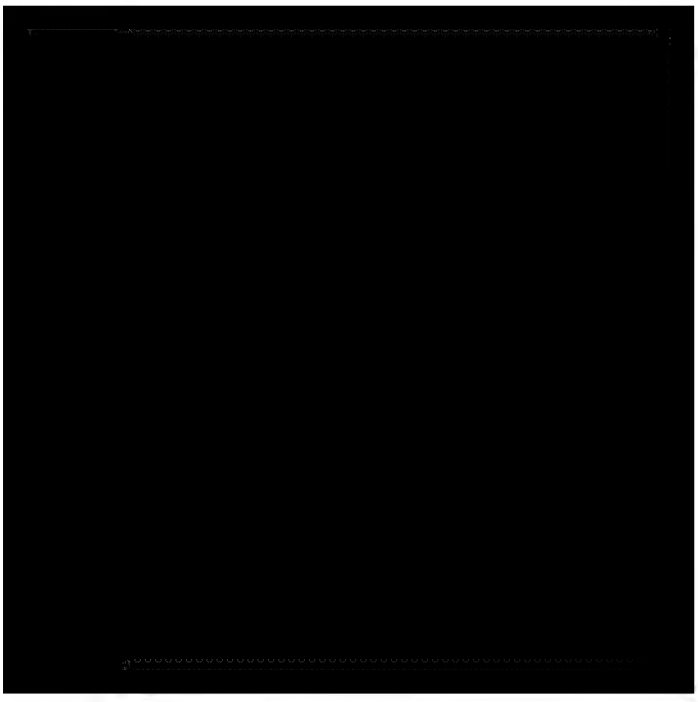


1. *Protococcus viridis. Ag.* 2. *Chlorococcum frustulosum. Carm.*
3. *Chlorococcum gigas. Grun.* 4. *Chlorococcum murorum. Grev.*
5. *Chlorococcum humicola. Näg.*



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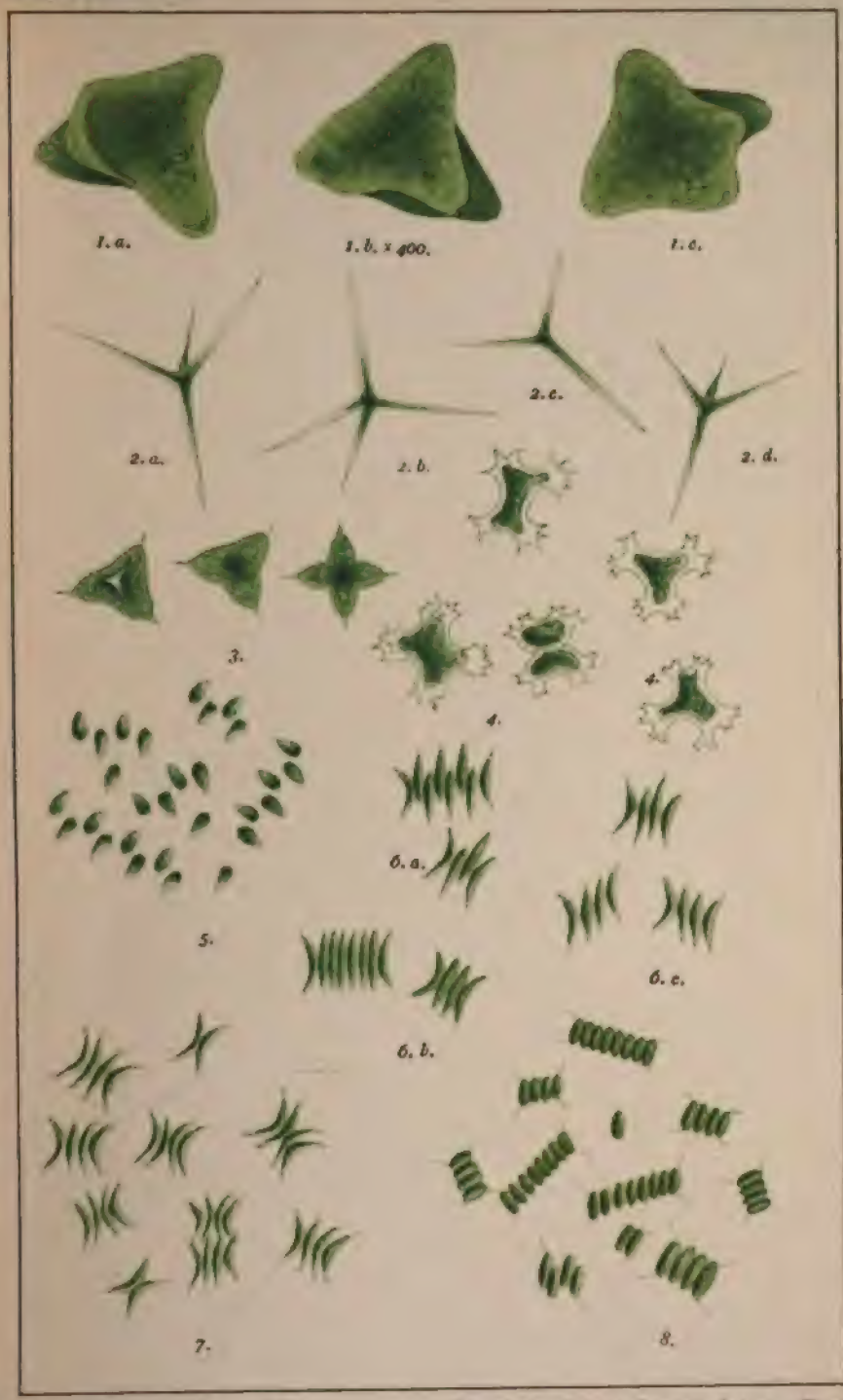
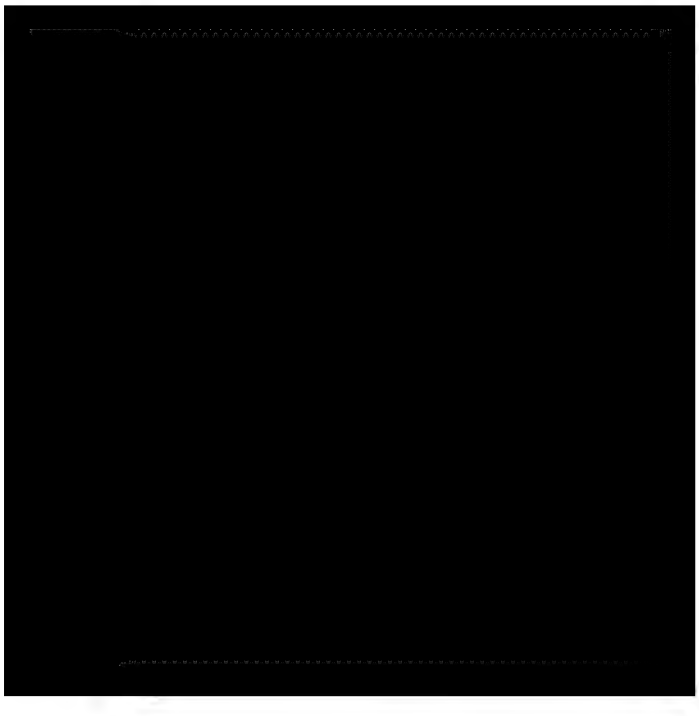


1. *Polyedrium gigas. Wittr.*
2. *Polyedrium longispinum. Perty.*
3. *Polyedrium tetrahedricum. Nag.*
4. Polyedrium enorme. DBary.
5. *Scenedesmus obtusus. Mey.*
6. Scenedesmus acutus. Mey.



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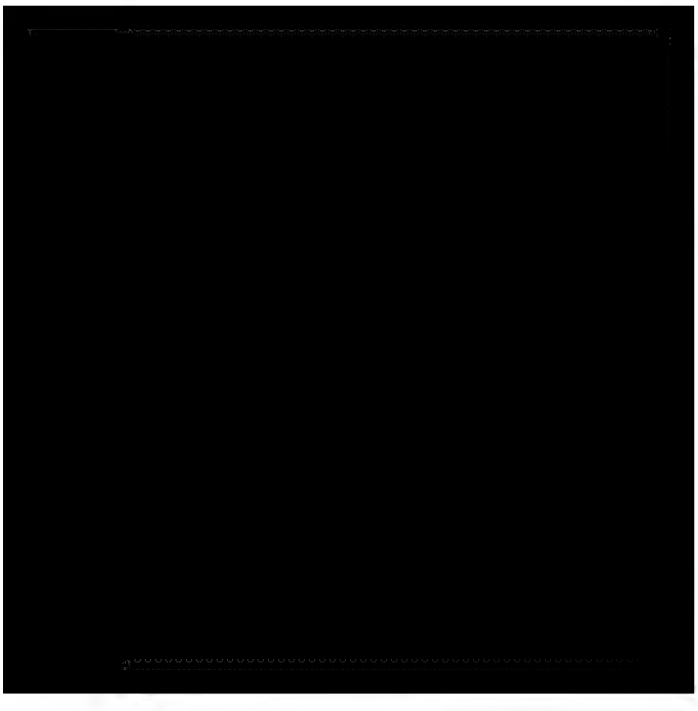
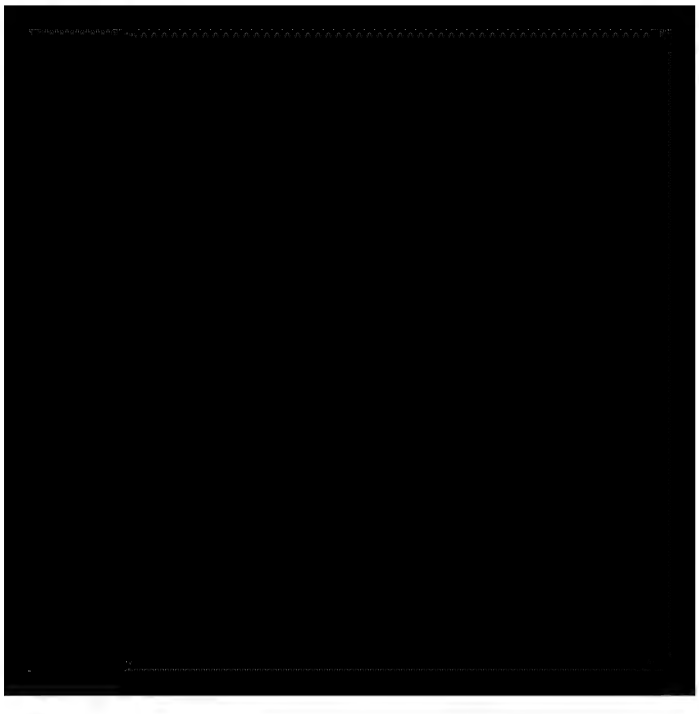
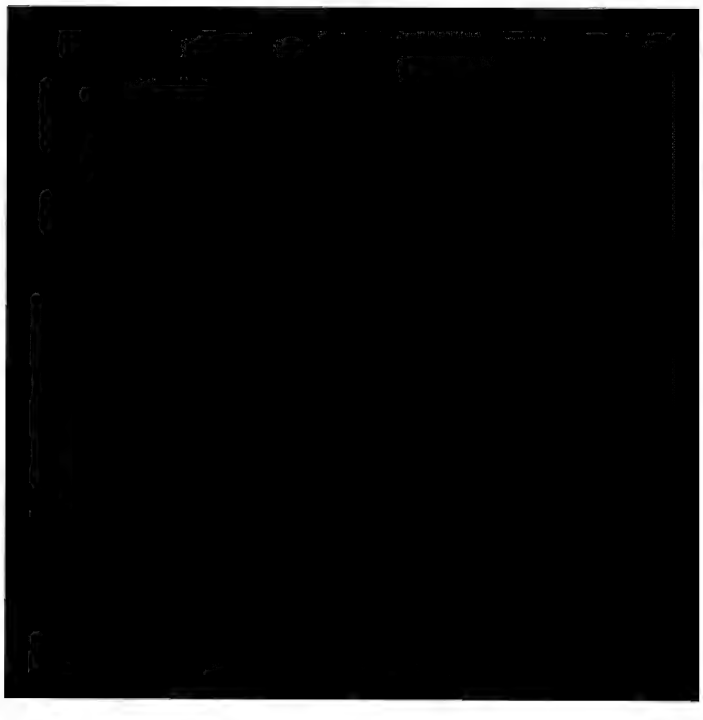
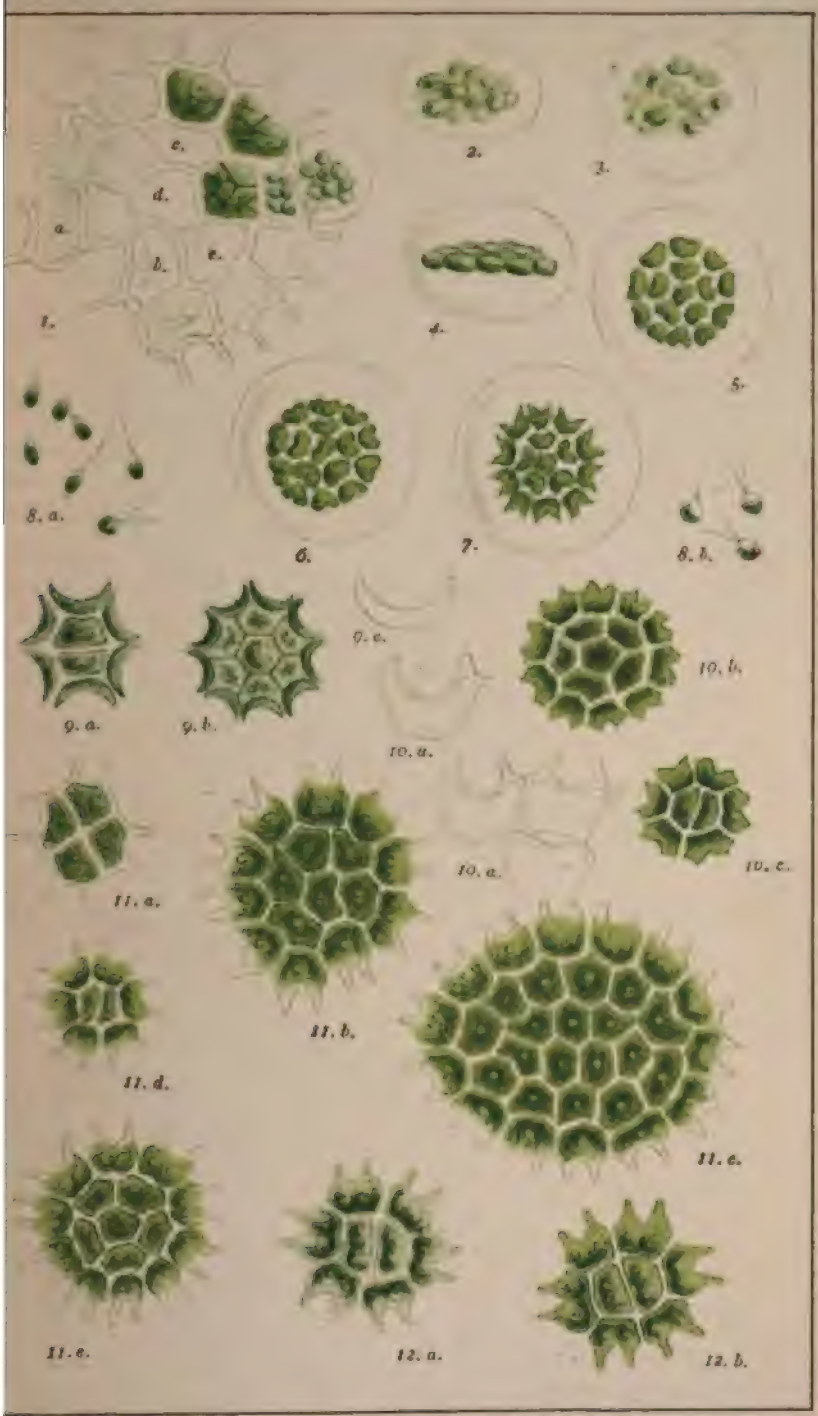
1. *Hydrodictyon utriculatum. Roth.* 2. Ophiocytium cochleare. Eich.



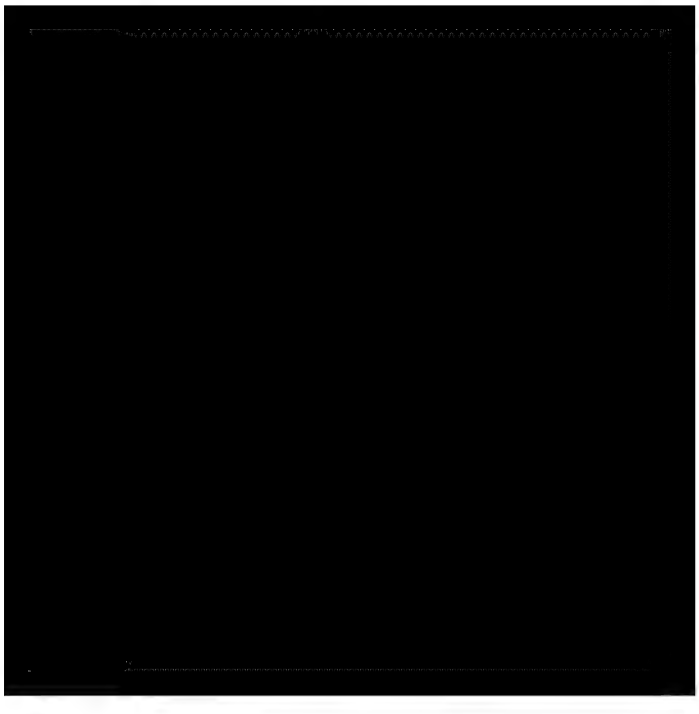


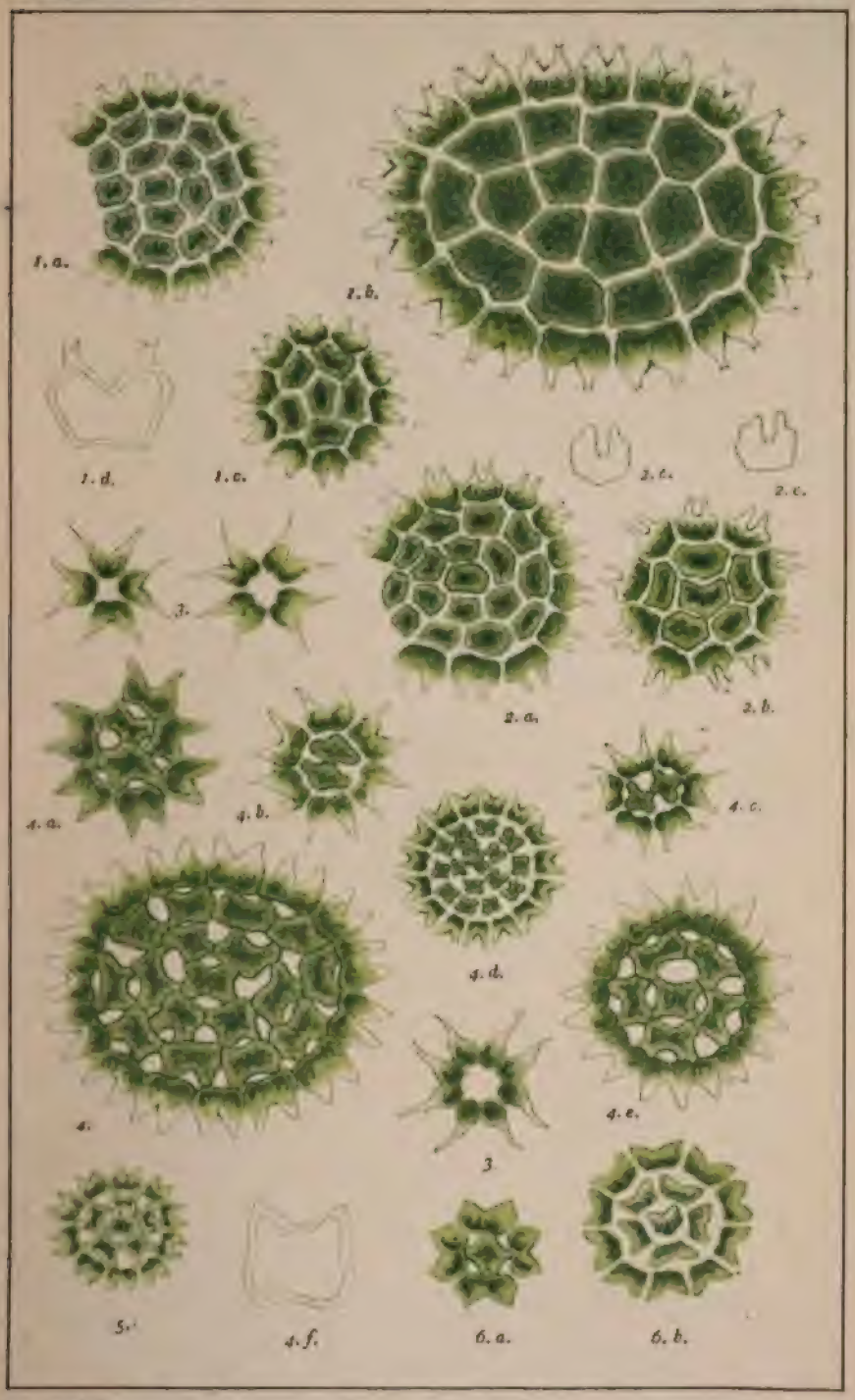
Sciadium arbuscula. Br.



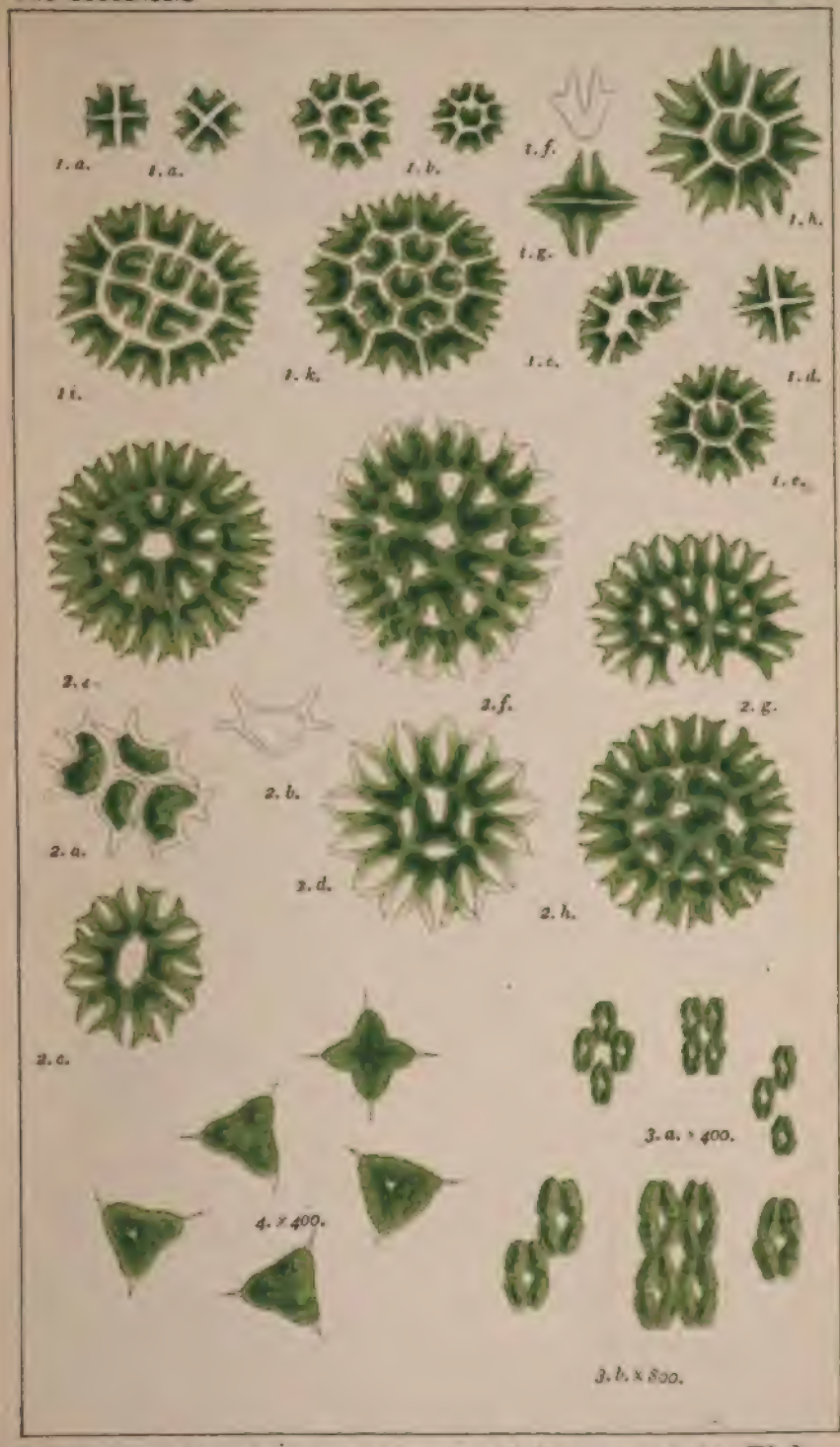


1-7. *Stages of development in Pediastrum Boryanum. Turp.*
Pediastrum Selenaea. Kutz. 10. *Pediastrum angulosum. Ehrb.*
Pediastrum Boryanum. Turp. 12. *var. granulosum. Br.*

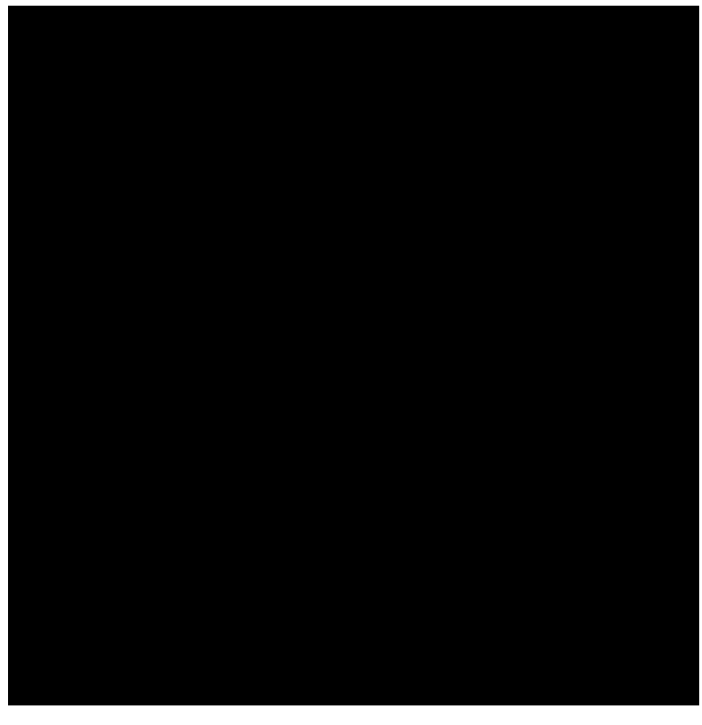


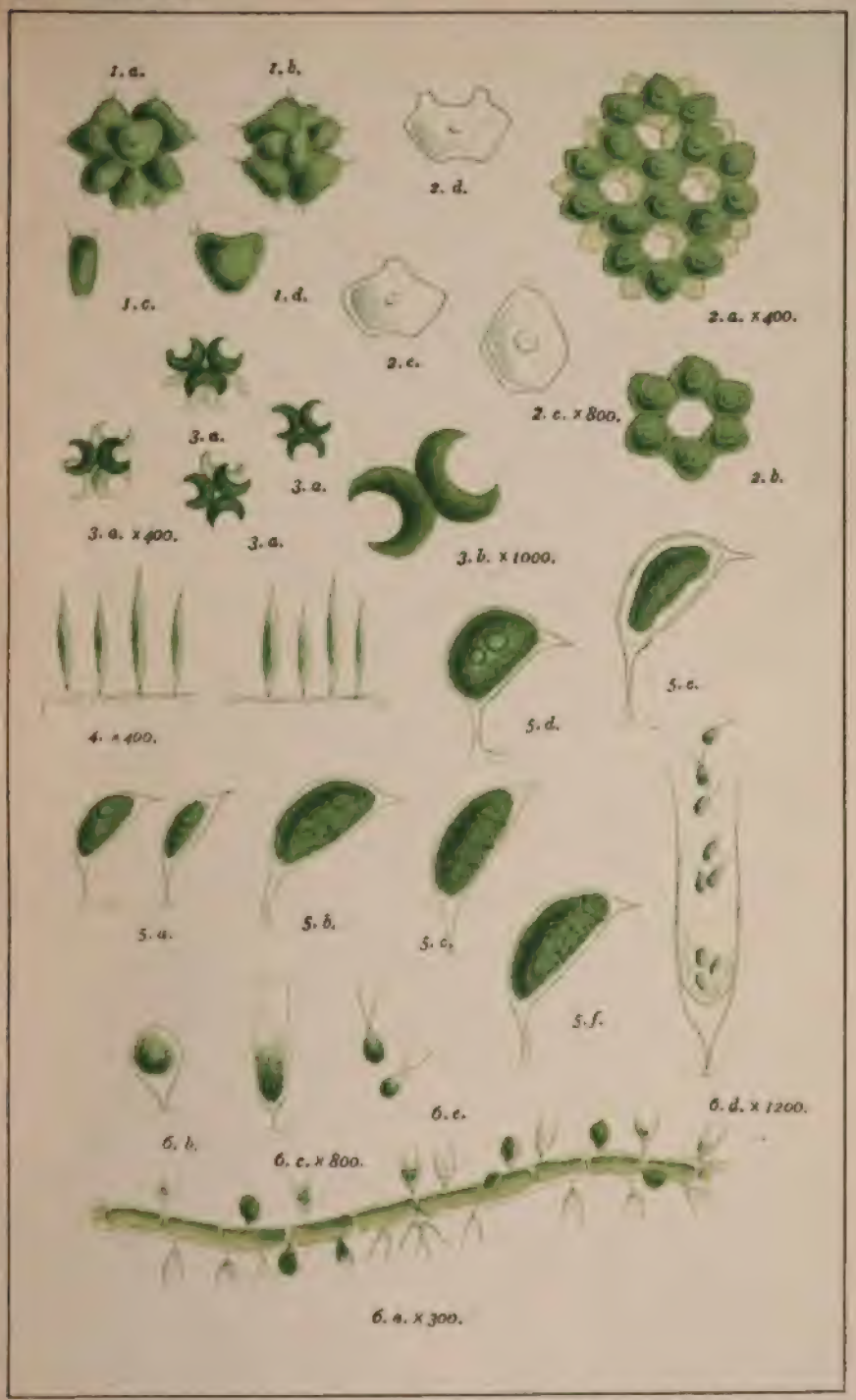


1. *Pediastrum bidentulum. Br.*
2. *Pediastrum constrictum.* Hass.
3. *Pediastrum gracile. Br.*
4. *Pediastrum pertusum.* Kutz.
5. *P. pertusum v. clathratum Br.*
6. *P. pertusum v. brachylobum.* B

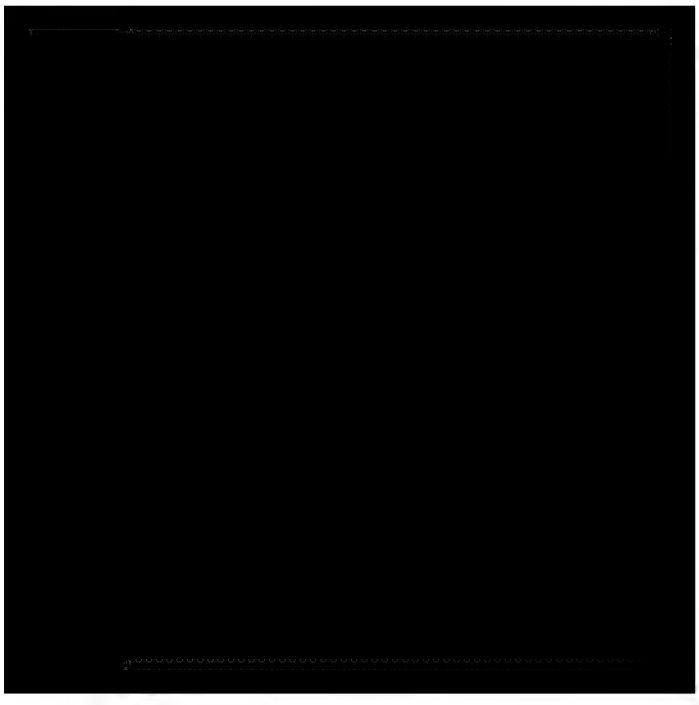


1. *Pediastrum Ehrenbergii. Corda.* 2. *Pediastrum rotula. Ehrb.*
3. *Staurogenia rectangularis. Nag.* 4. *Polyedrium tetraedricum. Nag.*

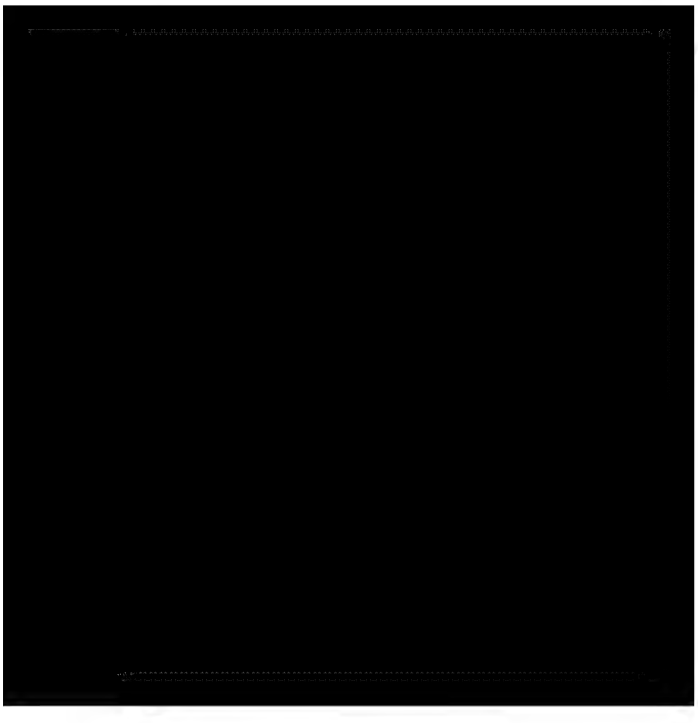


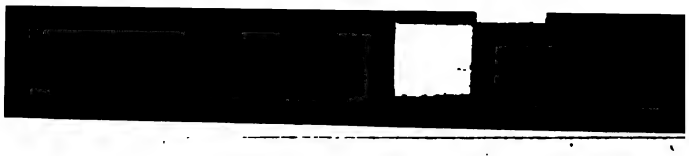


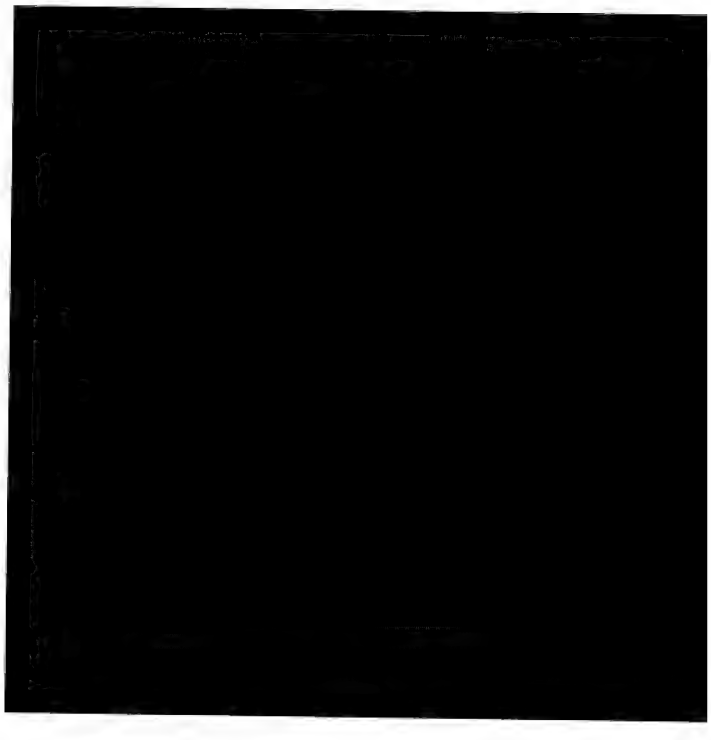
1. *Sorastrum spinulosum. Nag.* 2. *Cœlastrum sphærioum. Nag.*
3. *Selenastrum Bibraianum. Reinsch.* 4. *Characium tenue. Herm.*
5. *Characium ornithocephalum. Br.* 6. *Hydrianum heteromorphum. Reinsch.*

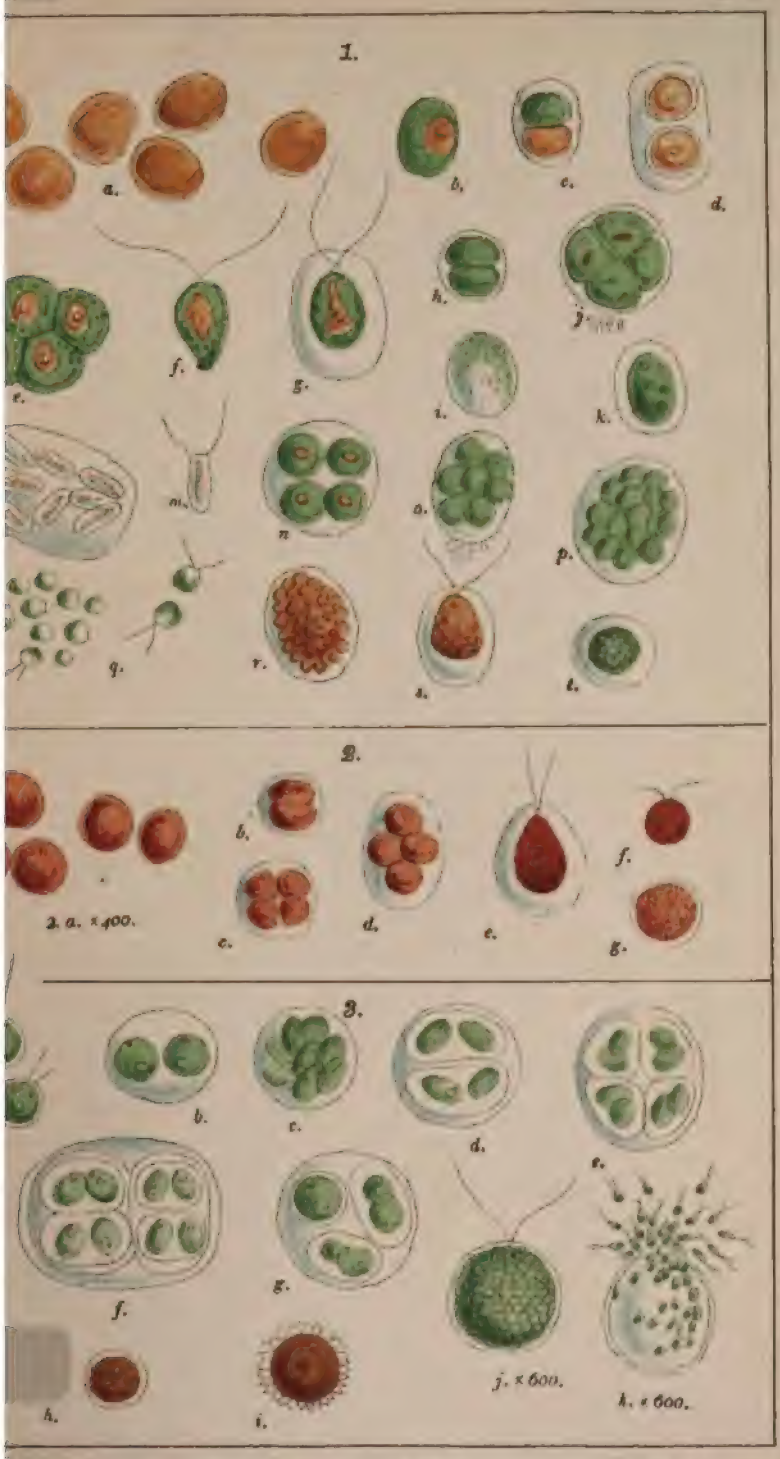


1-8. *Codiolum gregarium.* Br. 9-11. *Characium Sieboldi.* Br.

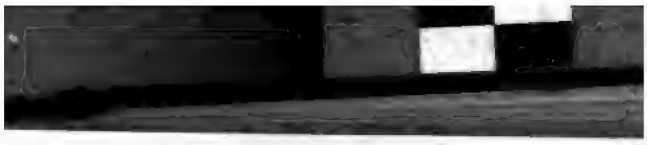


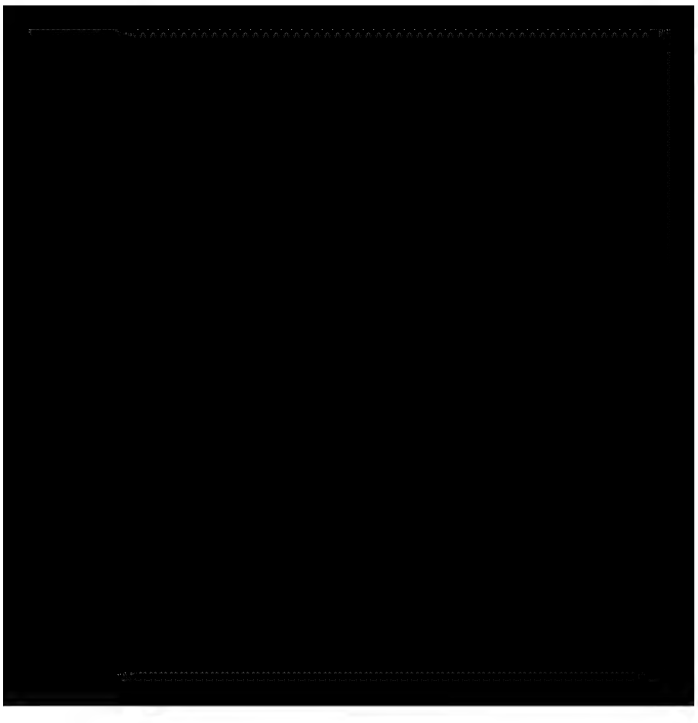


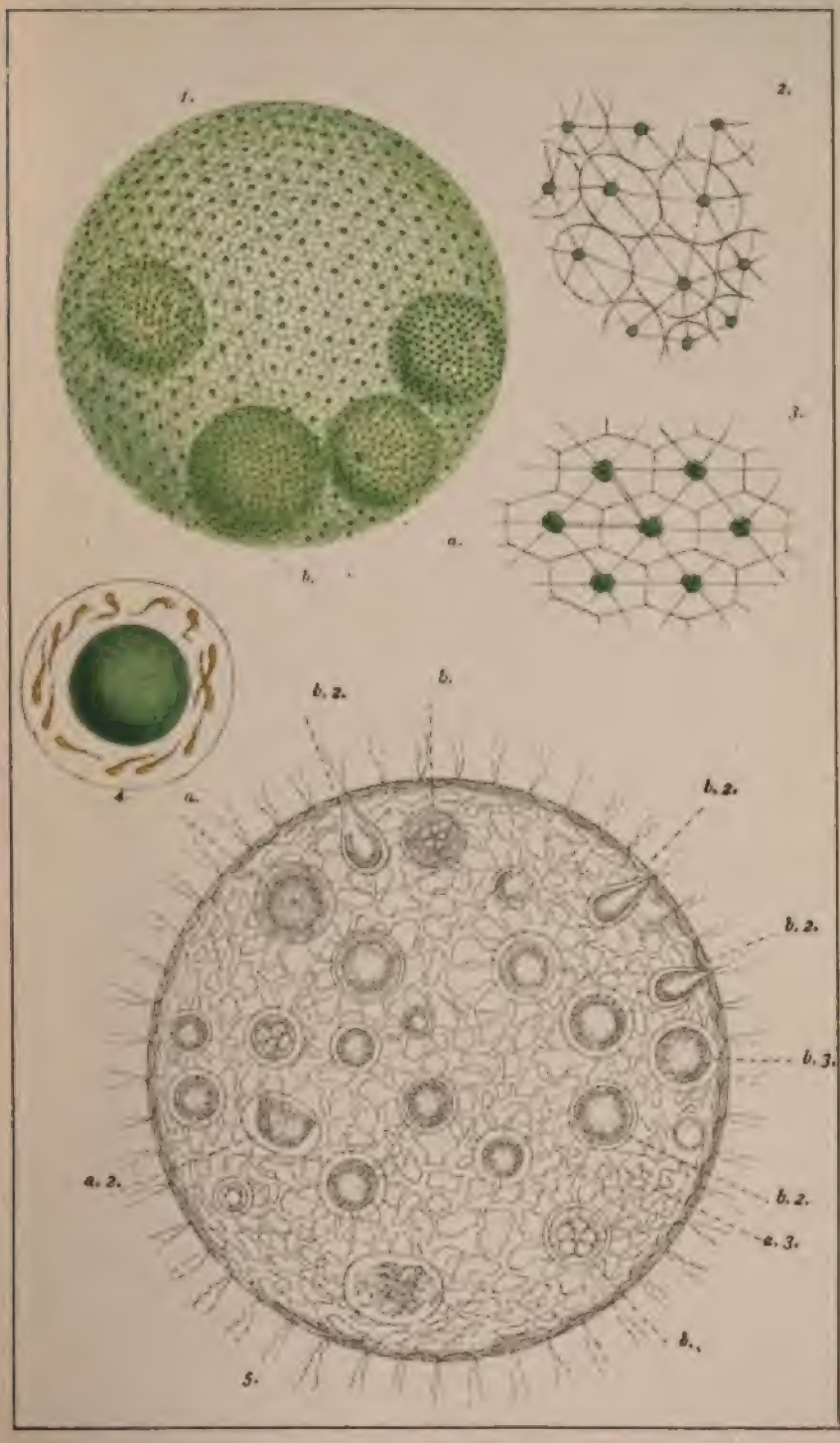




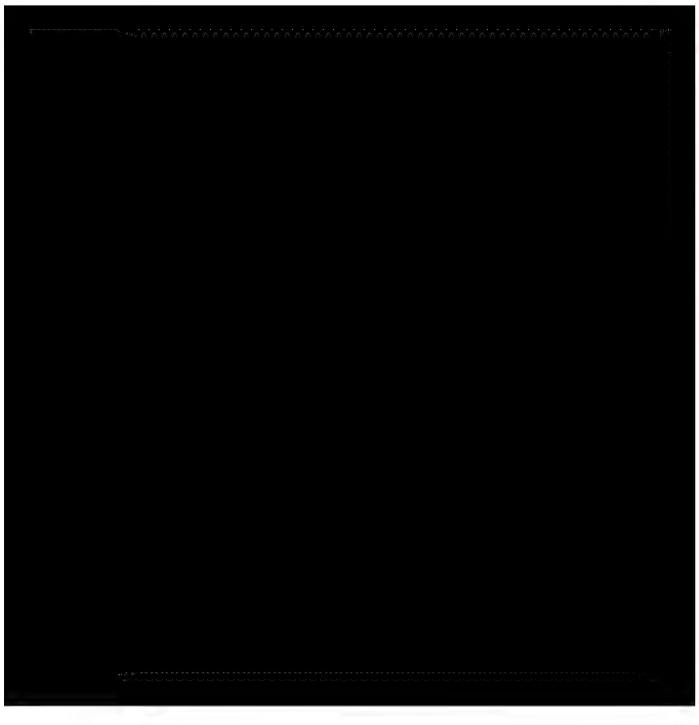
Chlamydococcus pluvialis. Br. 2. *Chlamydococcus nivalis.* Br.
3. *Chlamydomonas pulvisculus.* Ehrb.

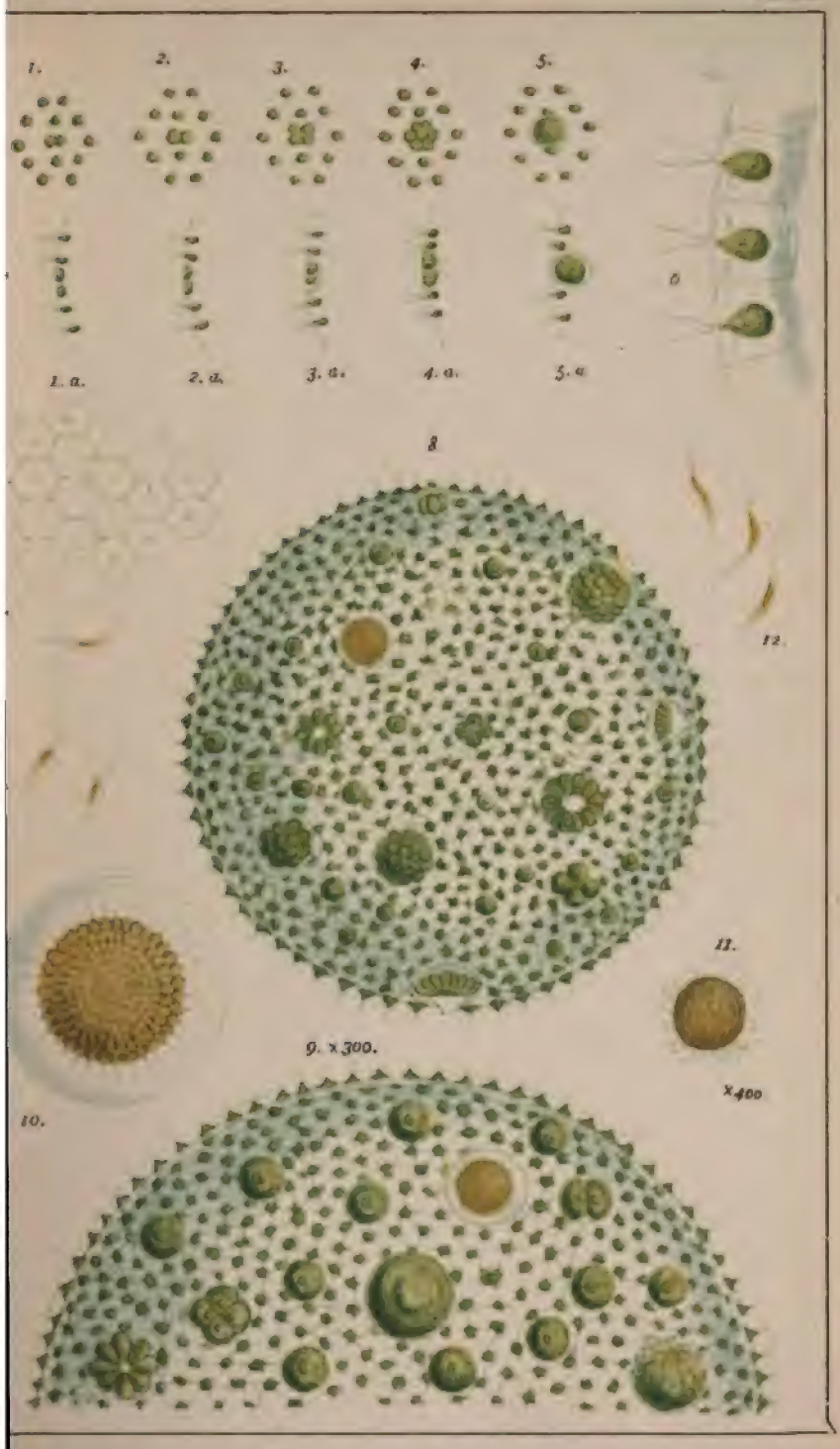




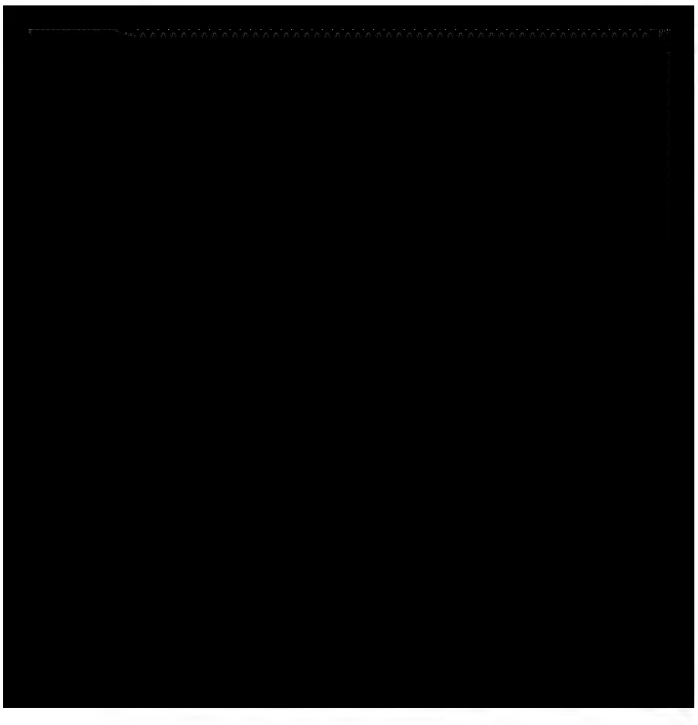


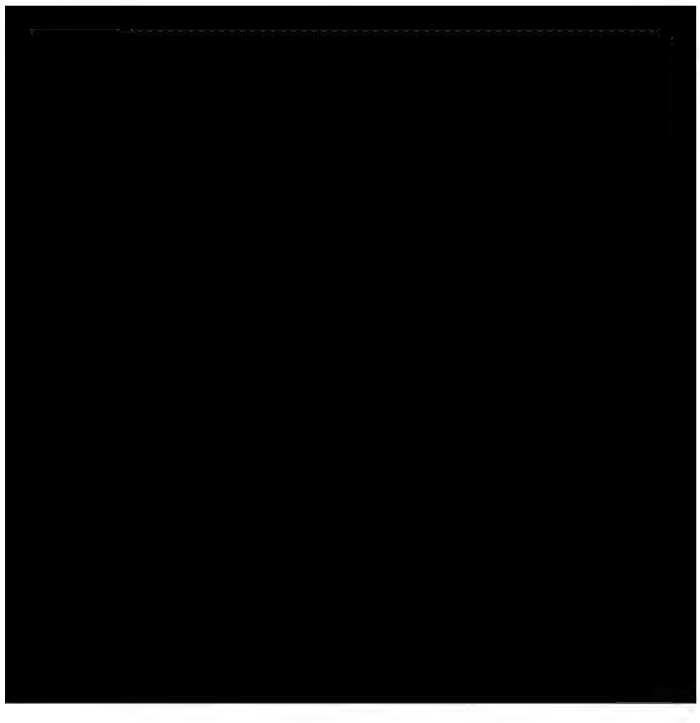
Volvox globator, Ehrb.

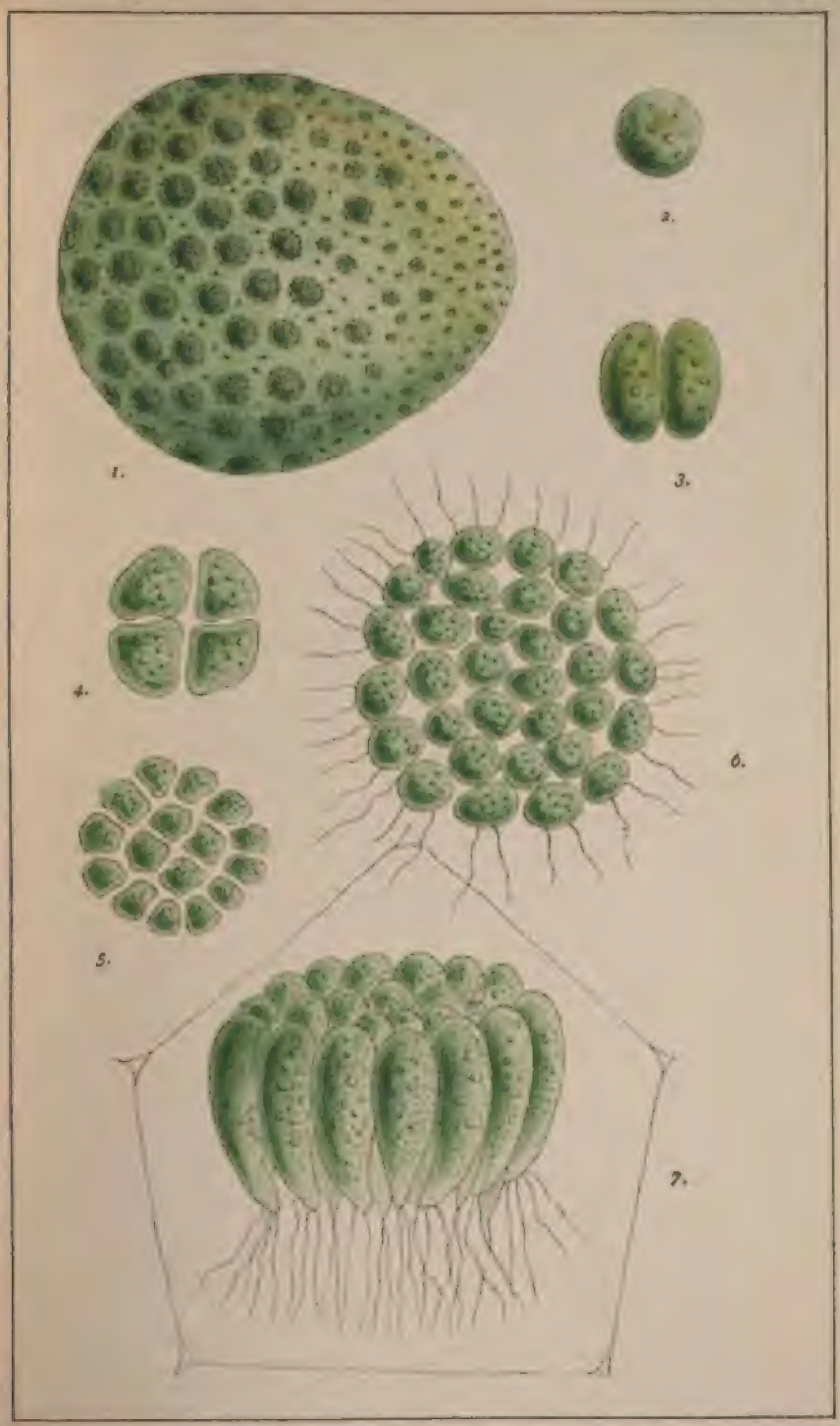




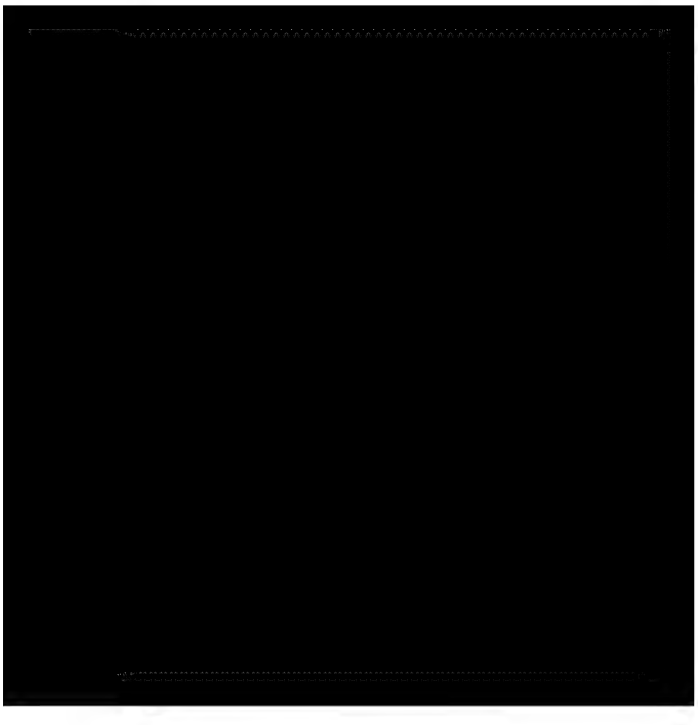
Volvox globator Ehr.

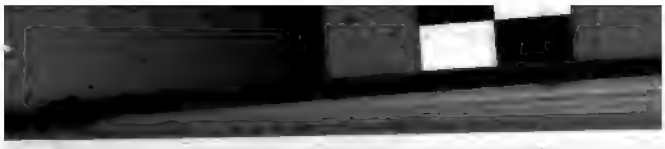


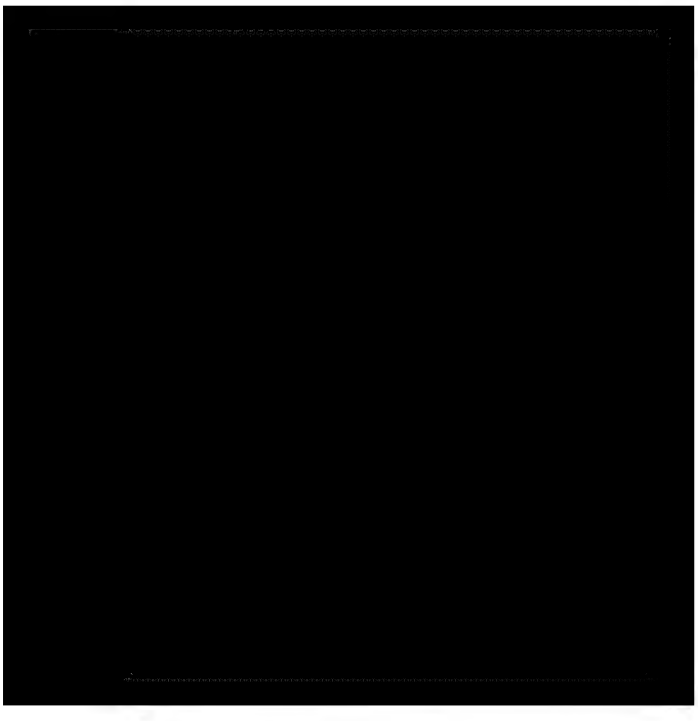


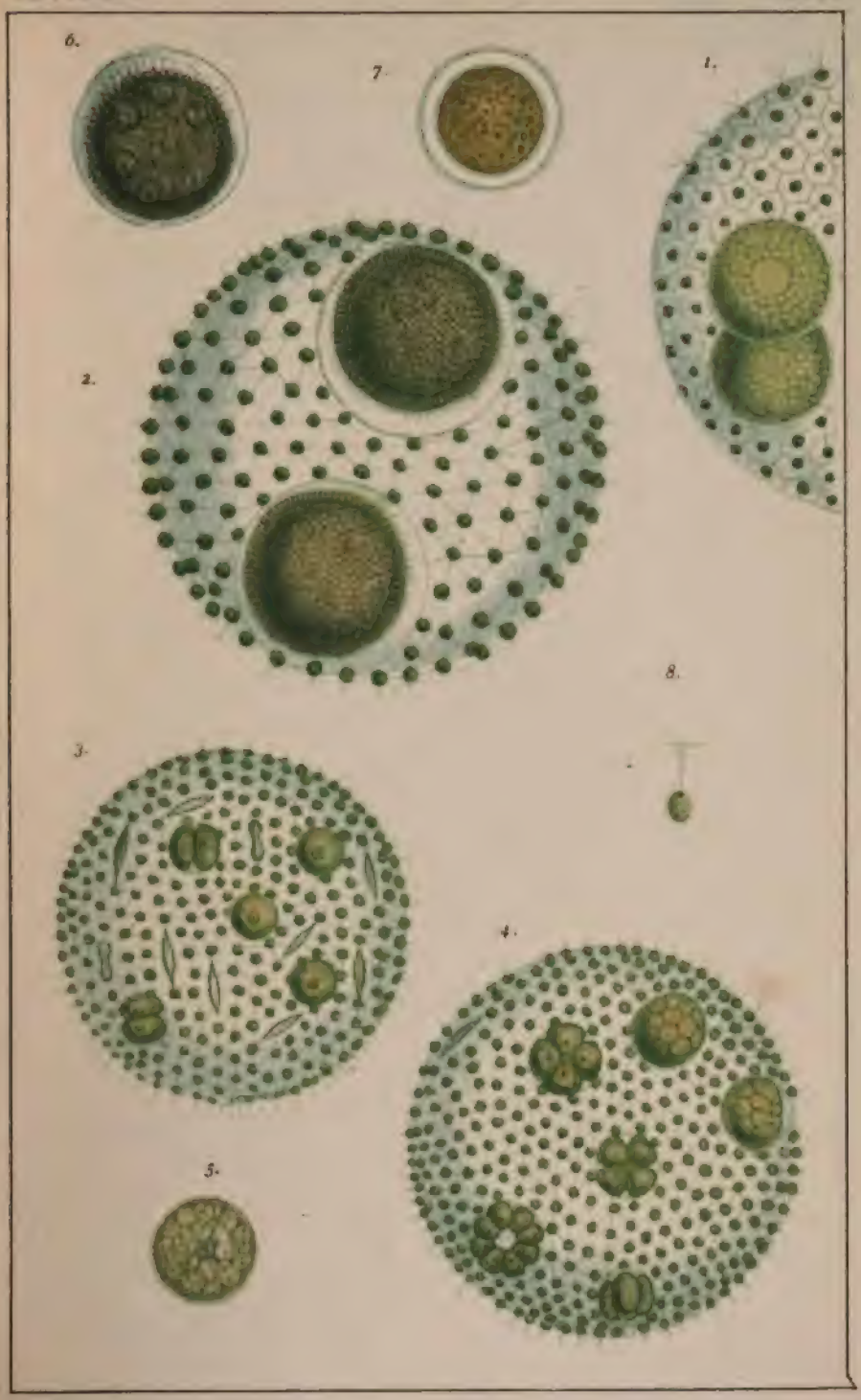


Volvox globator. ♂ (*Sphærostra volvox* Ehr.)

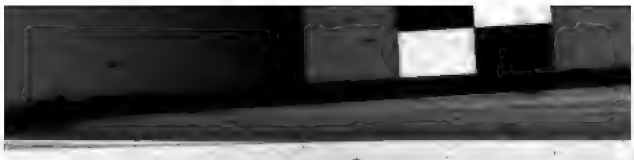


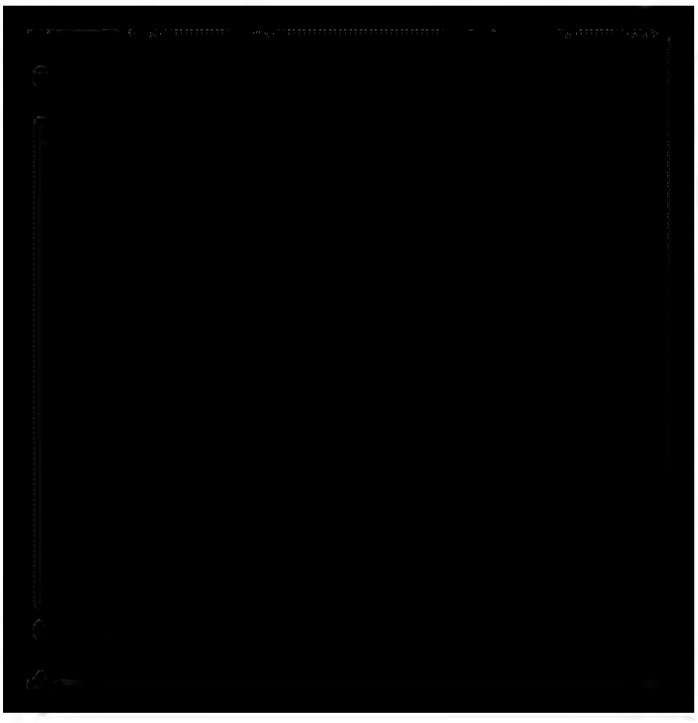




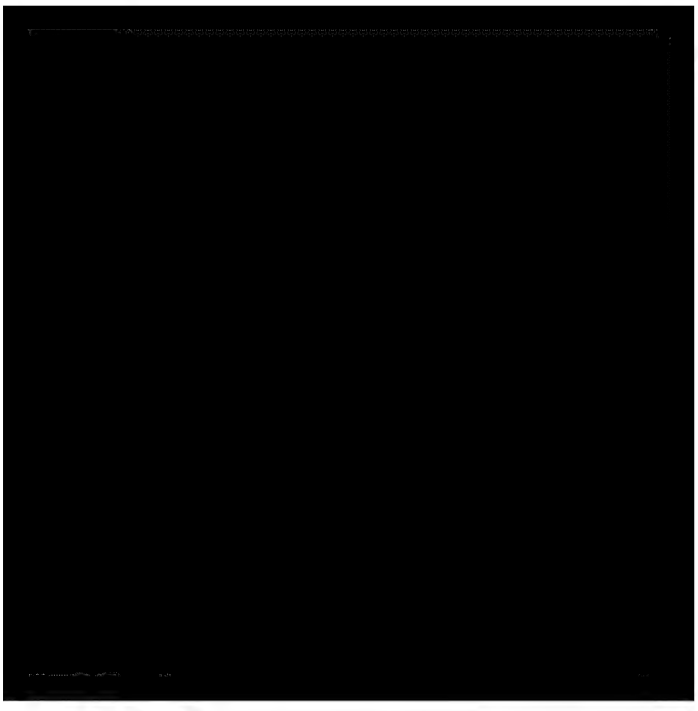


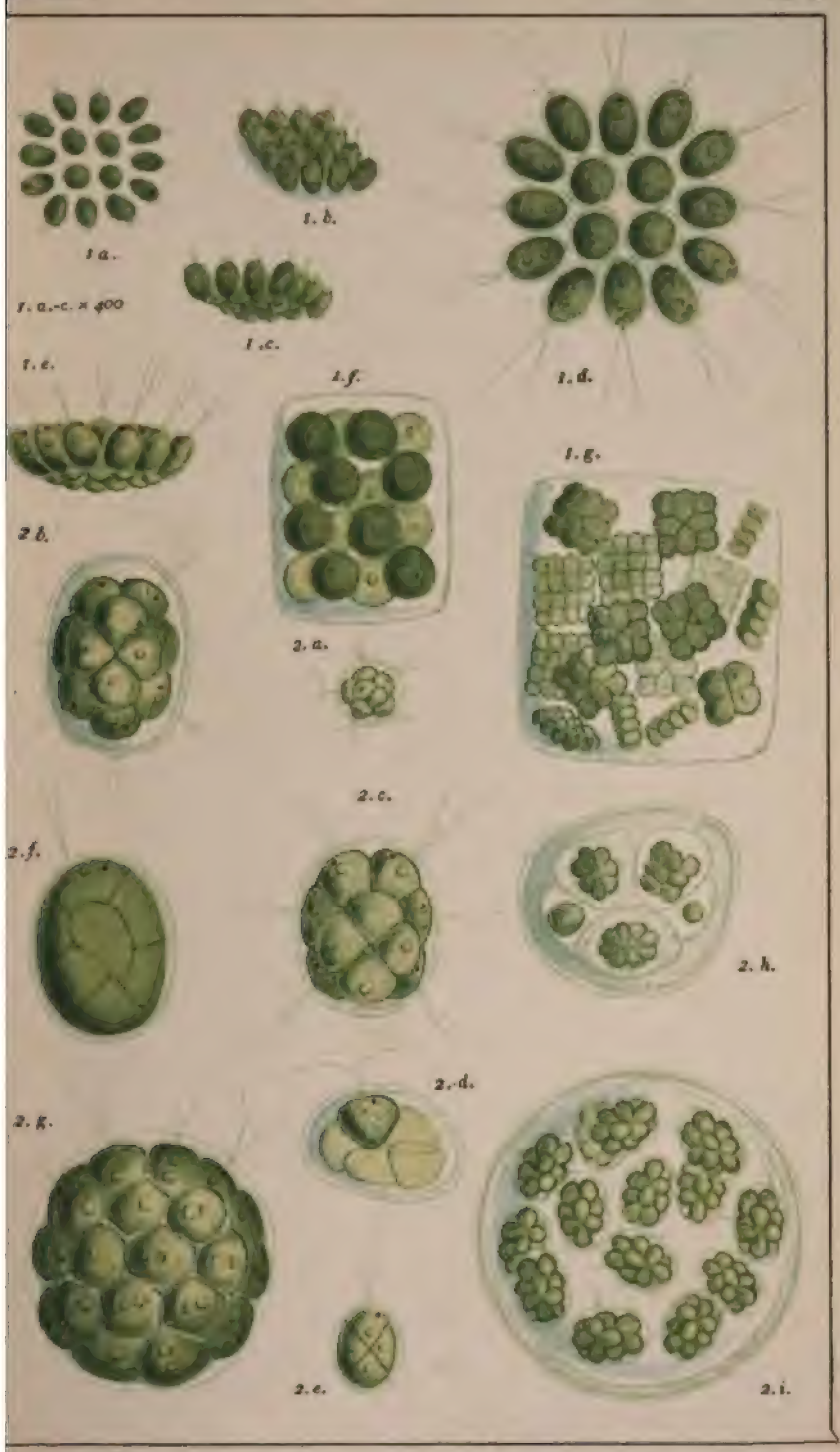
Volvox minor. Stein.



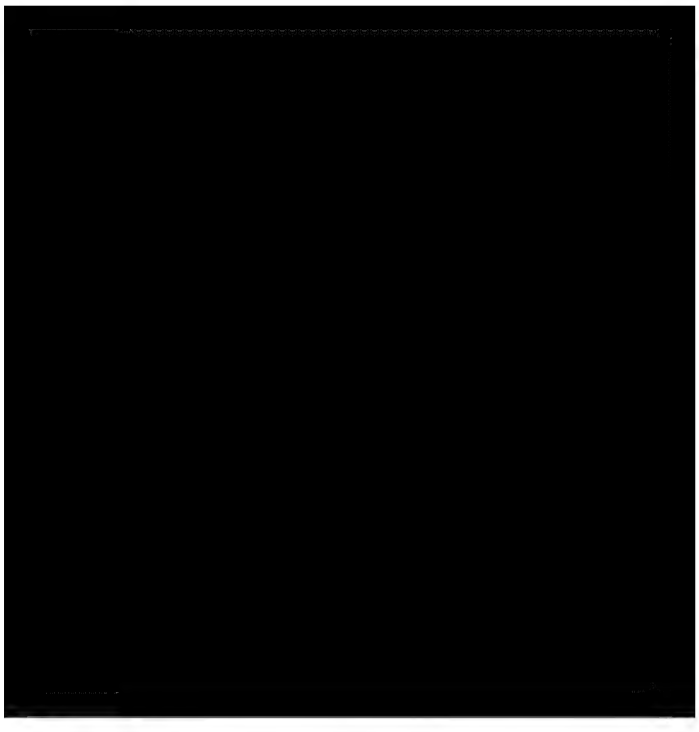


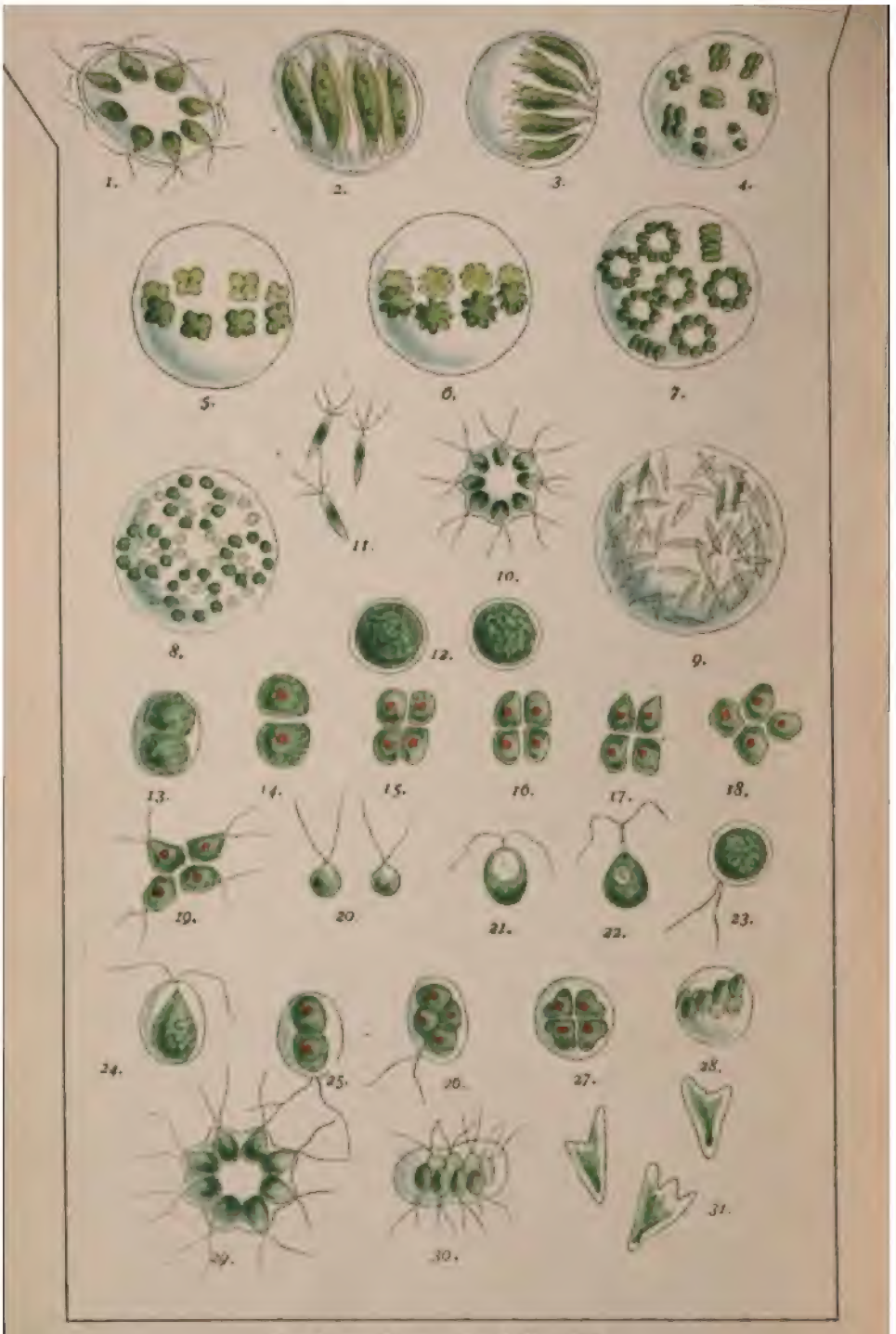
Eudorina elegans. Ehrb.



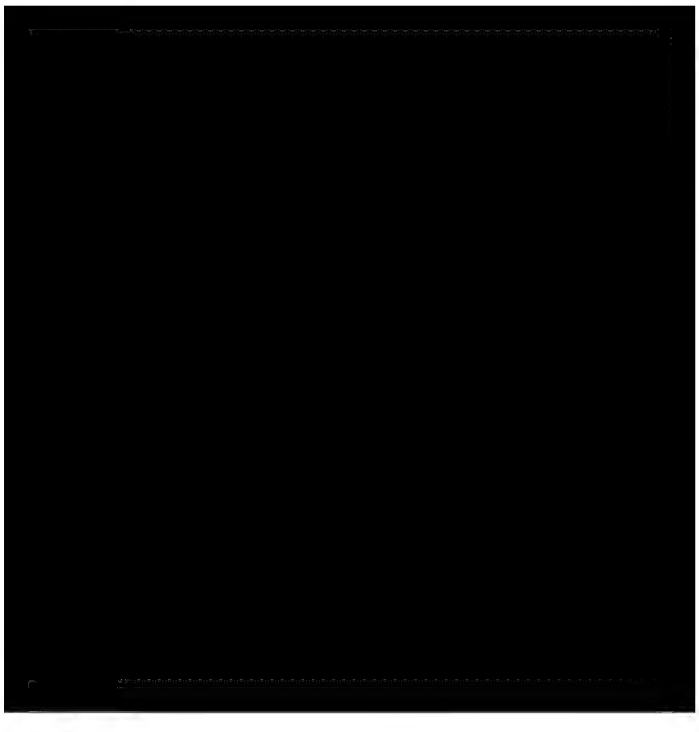


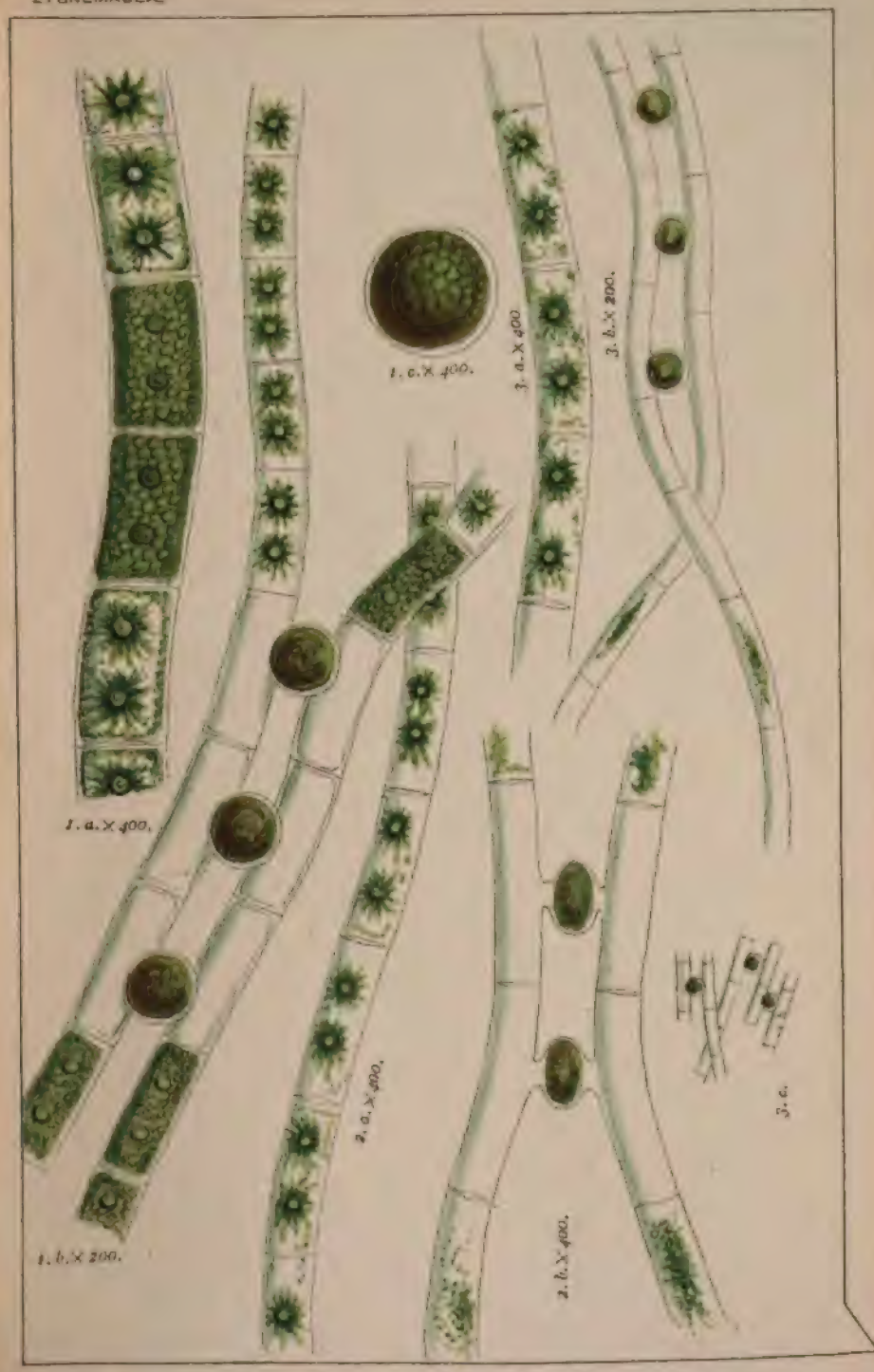
1. *Gonium pectorale. Mull.* 2. Pandorina morum. Bory.



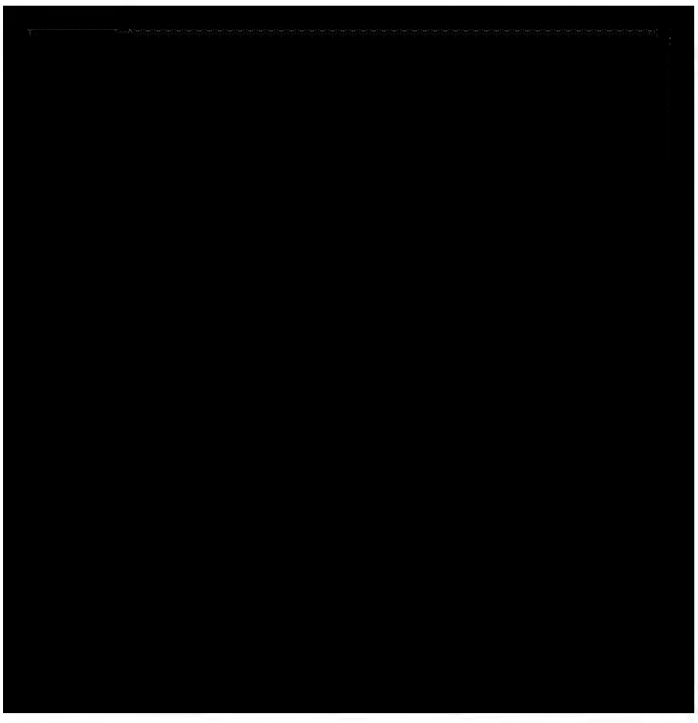


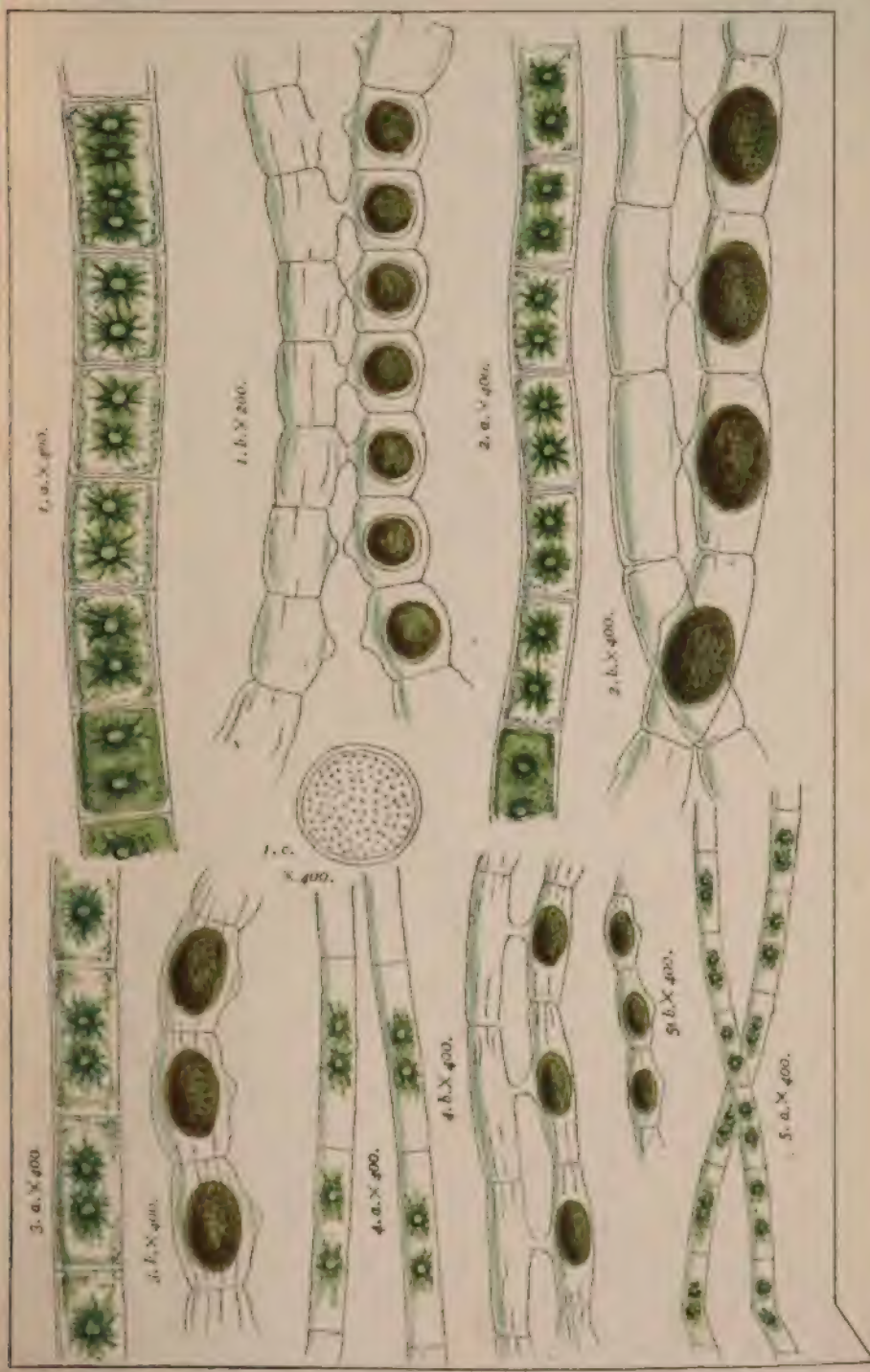
Stephanosphæra pluvialis. Cohn.



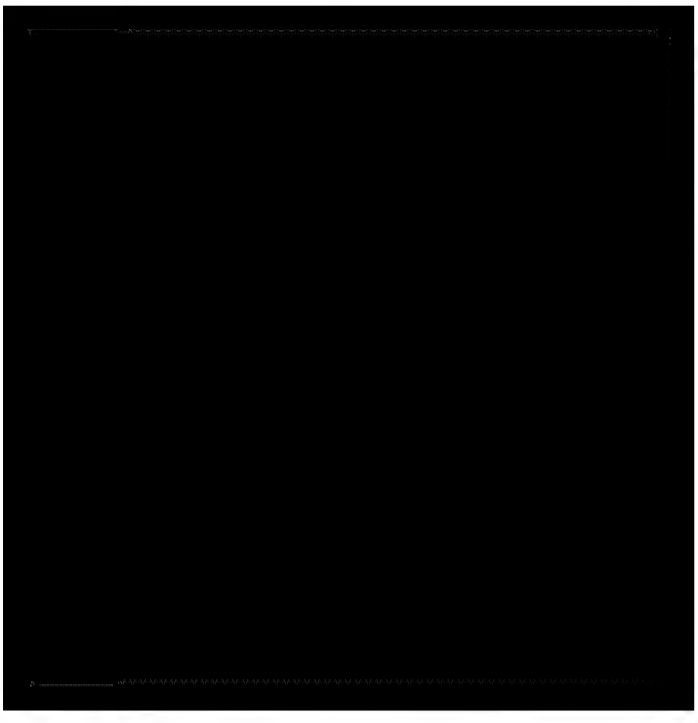


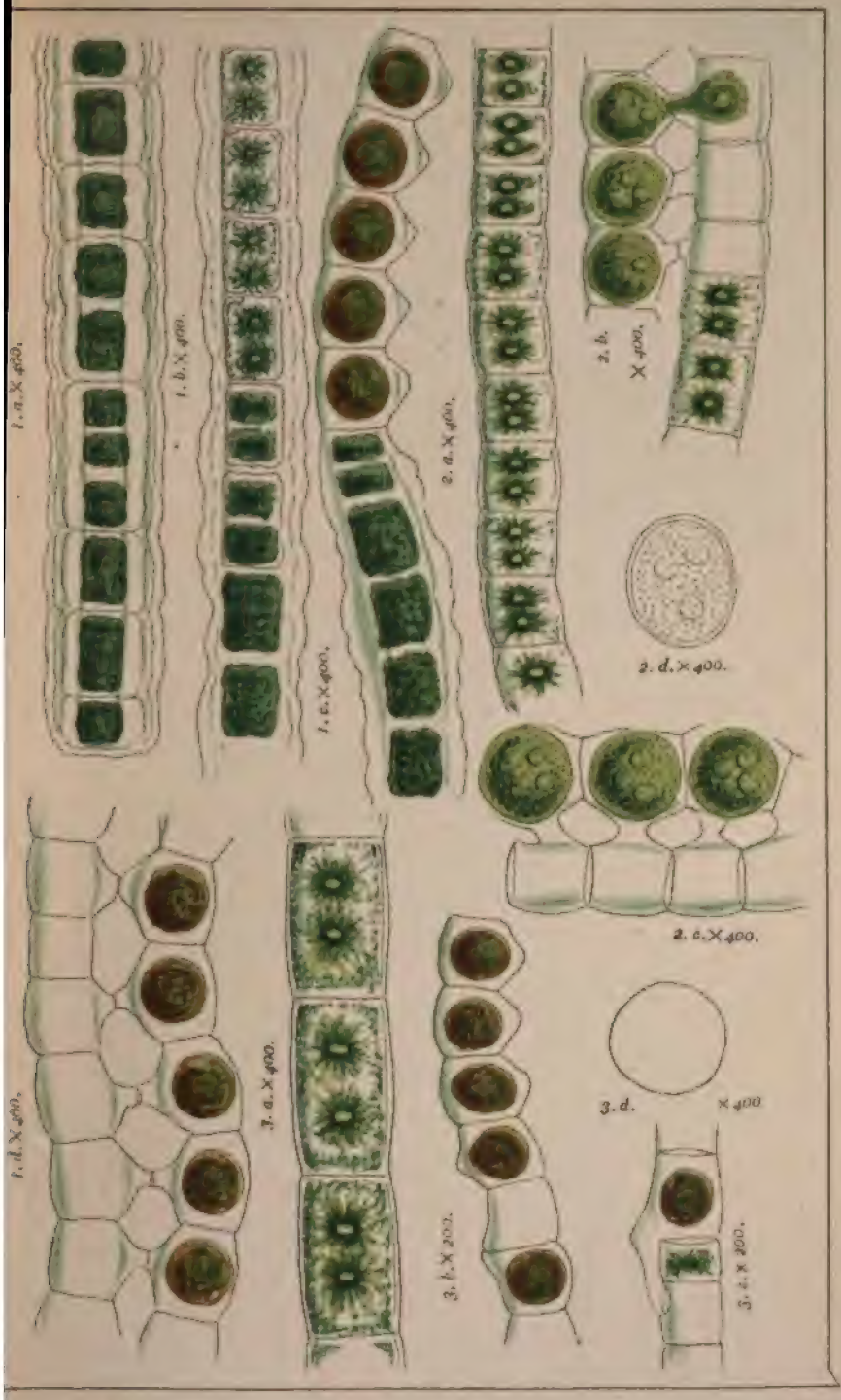
1. *Zygnema pectinatum. Ag.* 2. Zygnema Ralfsii. Hass.
3 *Zygnema parvulum. Kutz.*



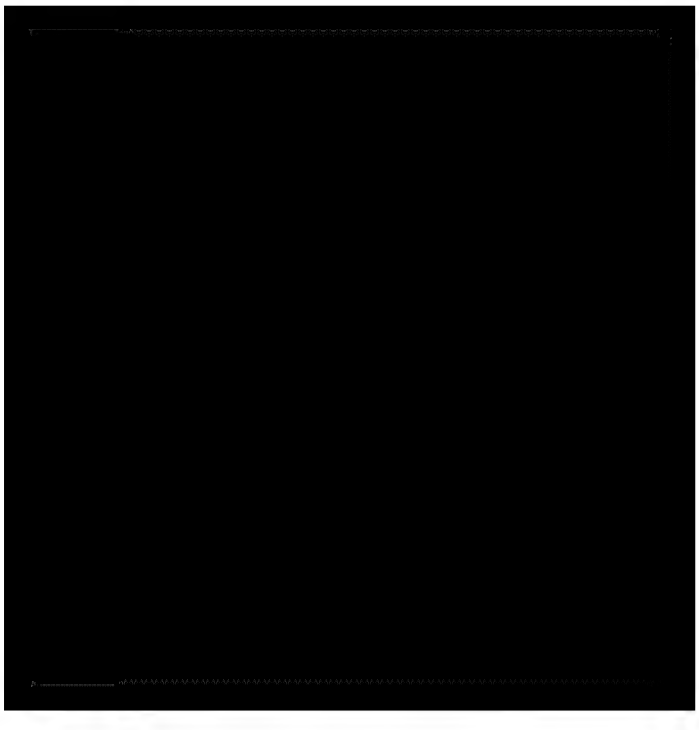


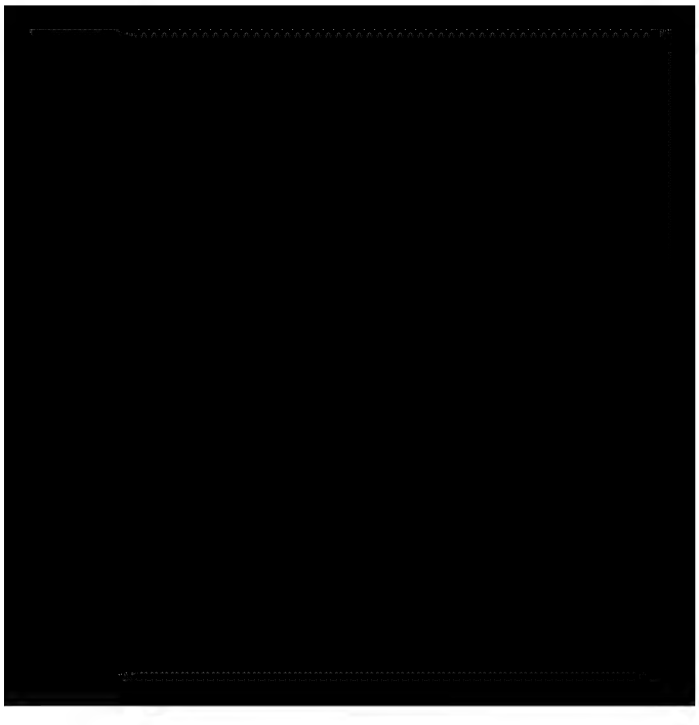
1. *Zygnema cruciatum. Ag.* 2. Zygnema stellinum. Vauch.
3. *Zygnema Vaucheri. Ag.* 4. var. subtile. 5. var. stagna

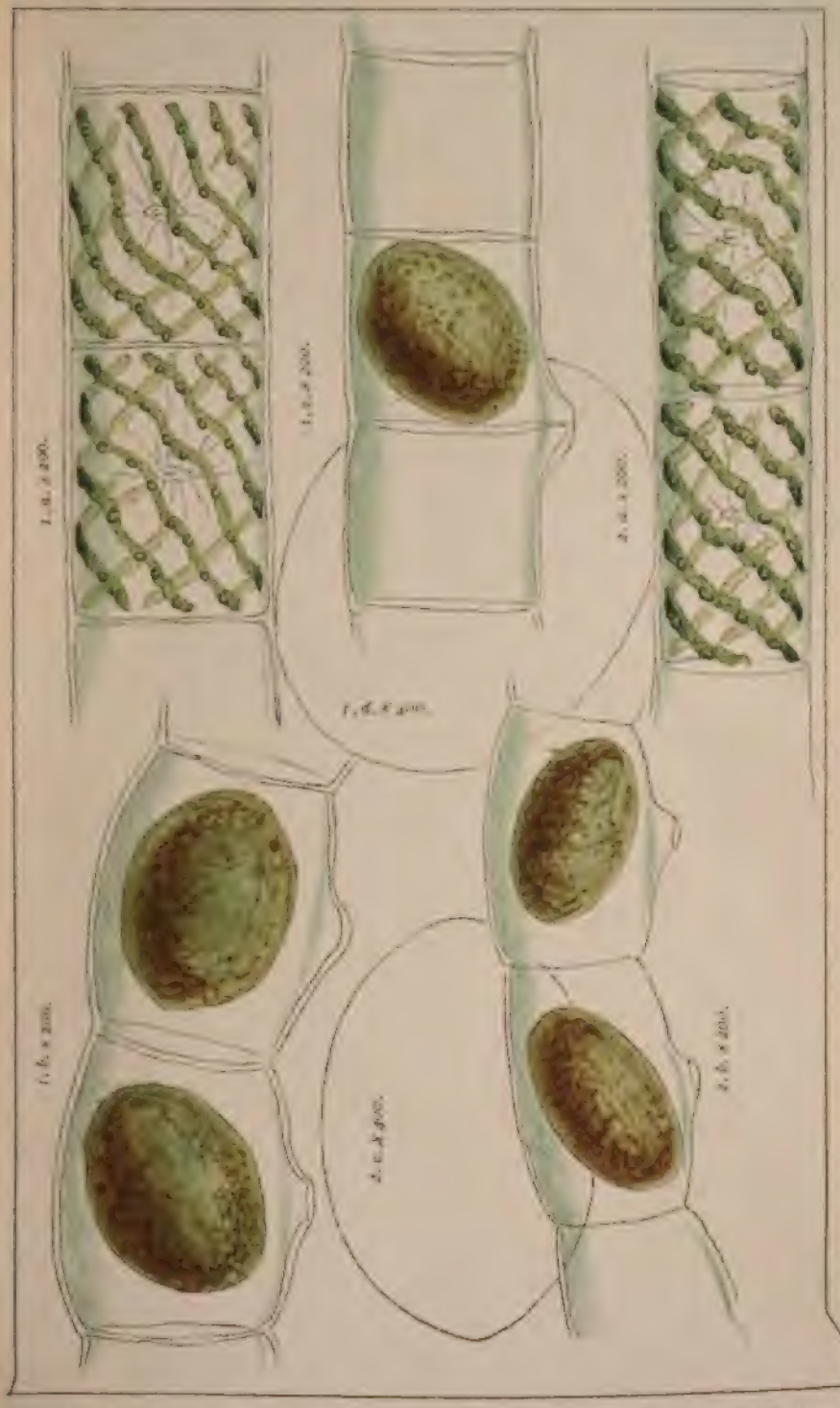




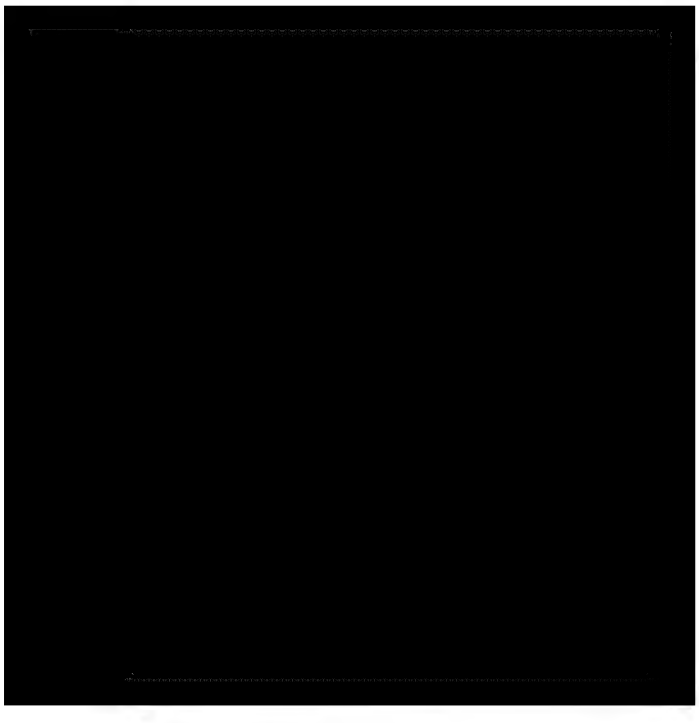
1. *Zygnema anomalum* Rabh. 2. *Zygnema leiospermum* DB
3. *Zygnema insigne* Kütz.

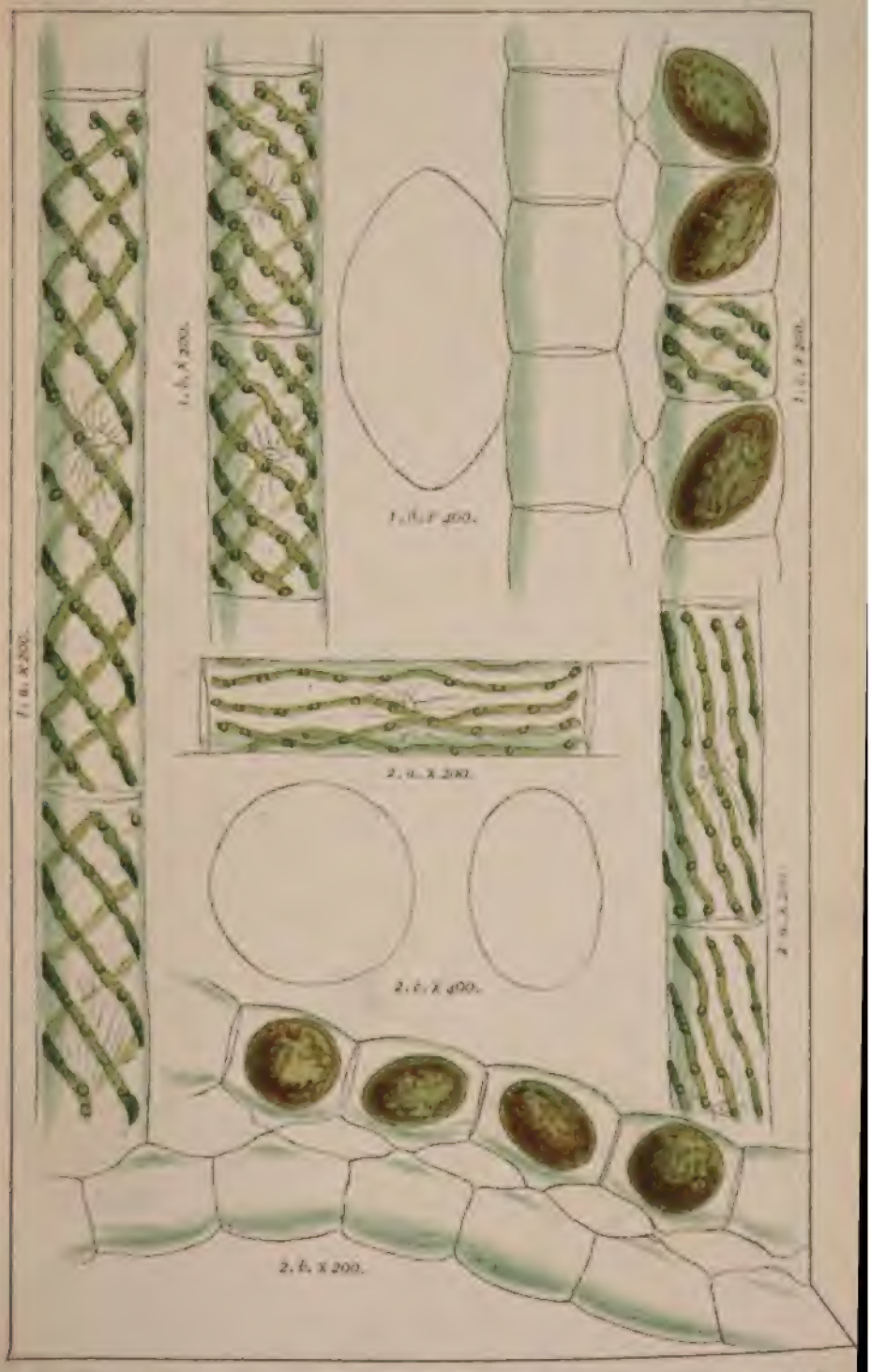




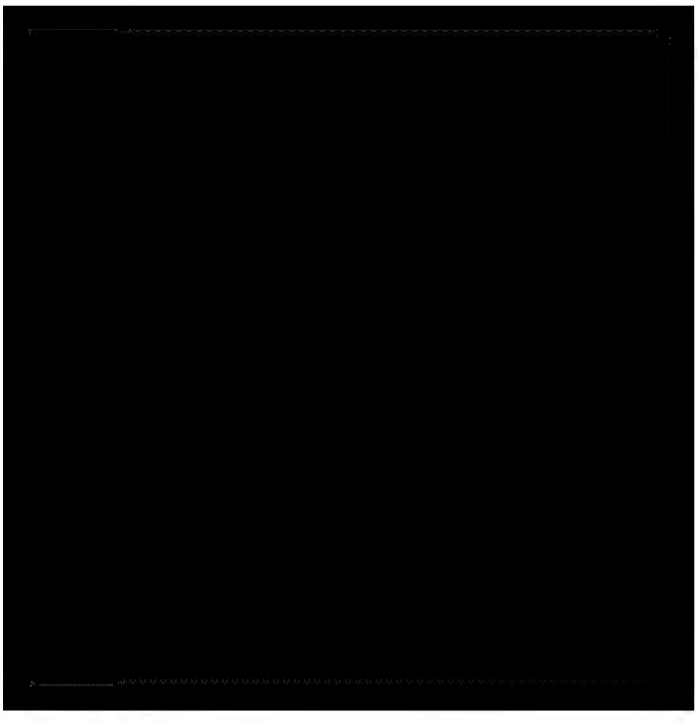


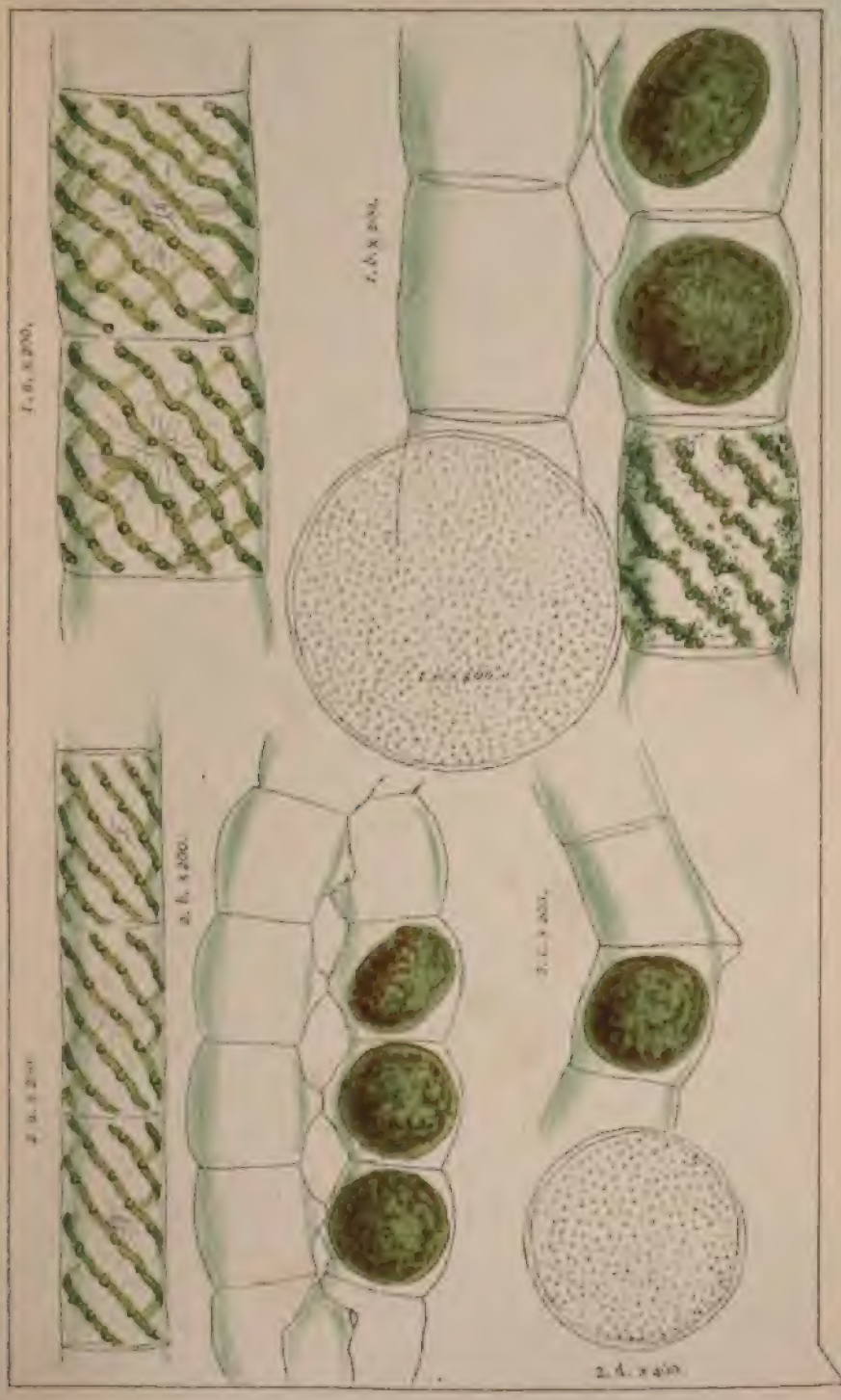
1. *Spirogyra insignis*. Kütz. 2. *Spirogyra jugalis*. (Dillw.)



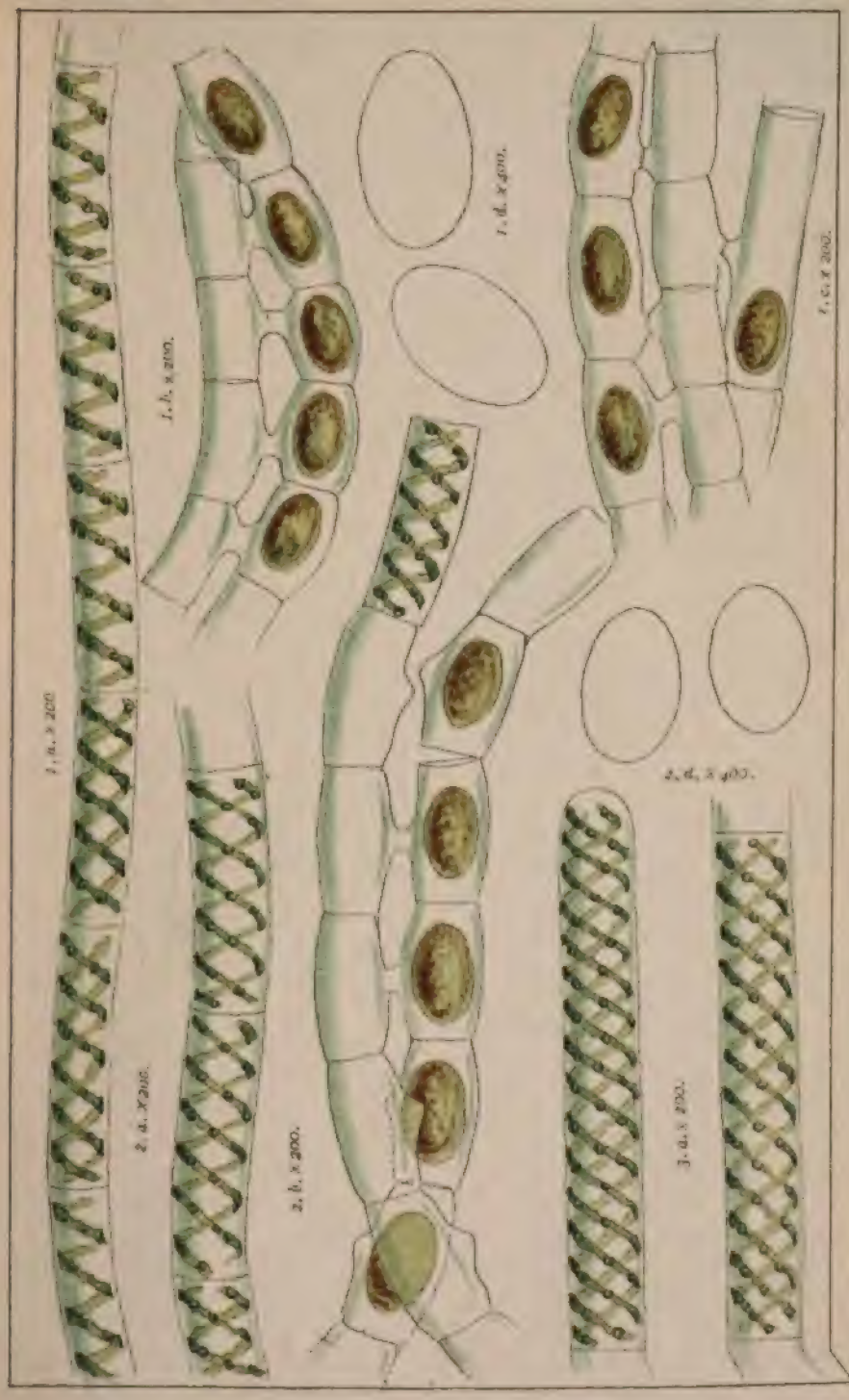


1. *Spirogyra nitida.* Dillw. 2. *Spirogyra orthospira.* Nob.



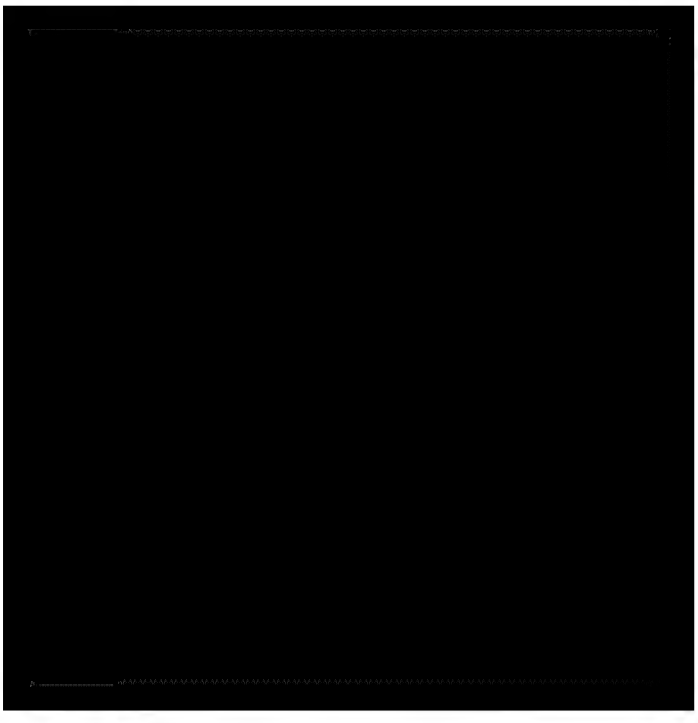


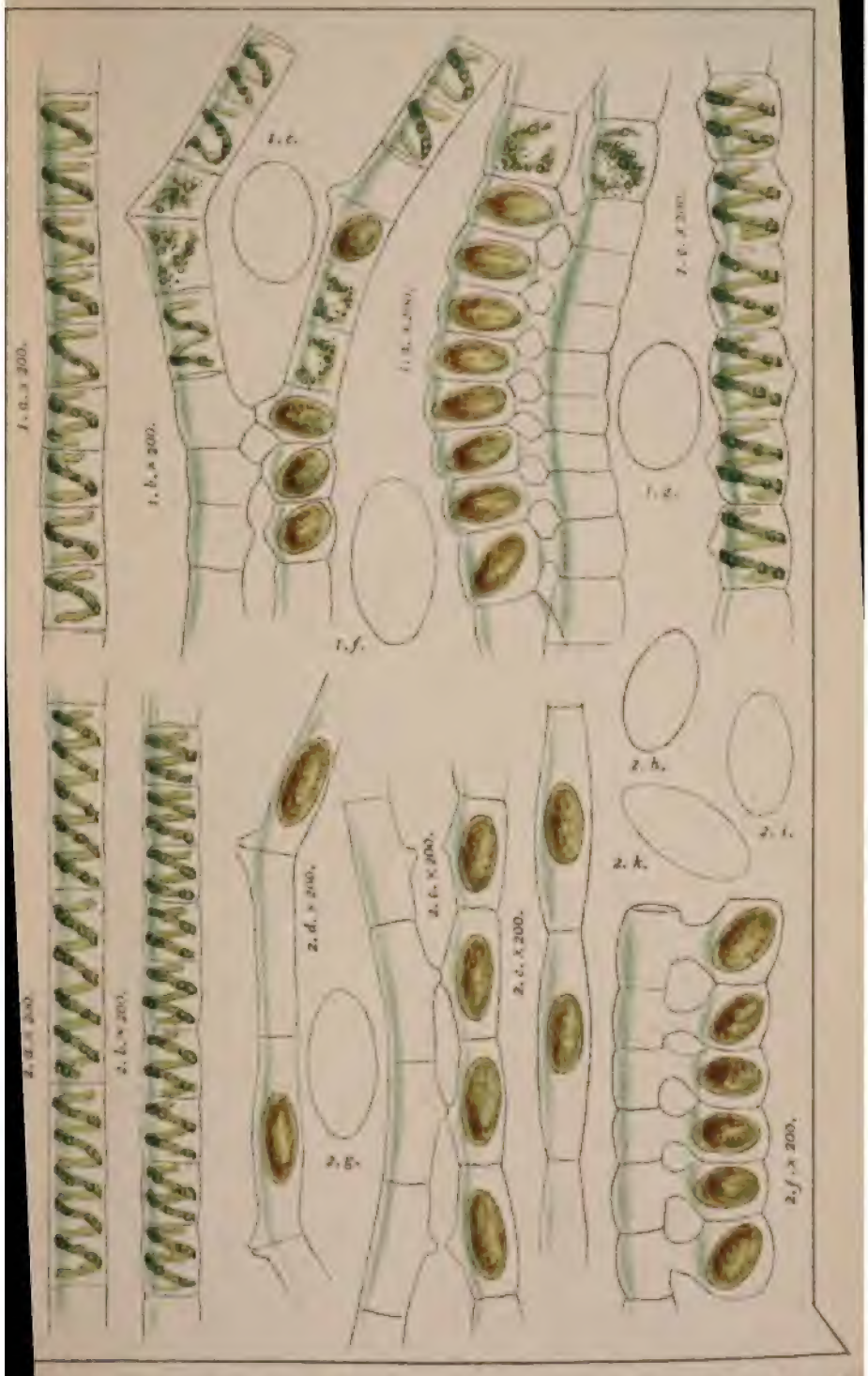
1. *Spirogyra reticulata*. Hass. 2. *Spirogyra bellis*. Hass.



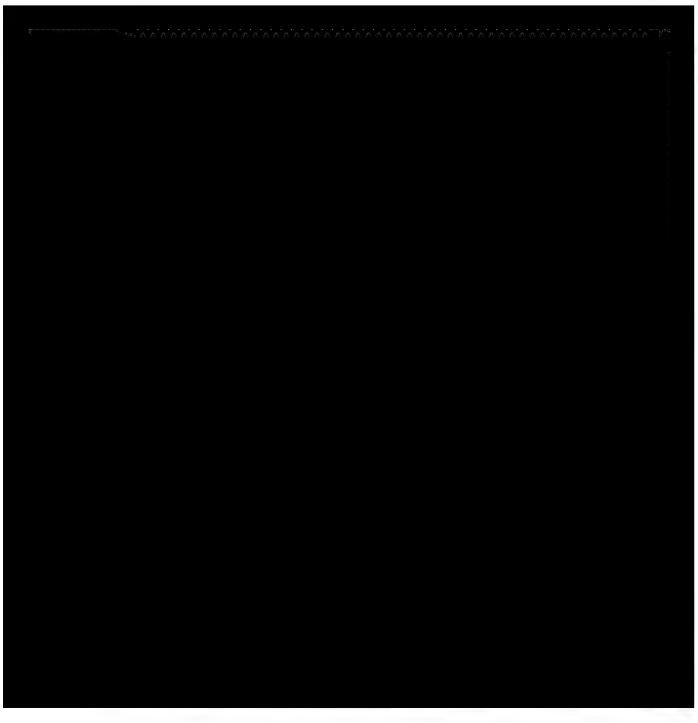
Spirogyra particalis. Vauch.

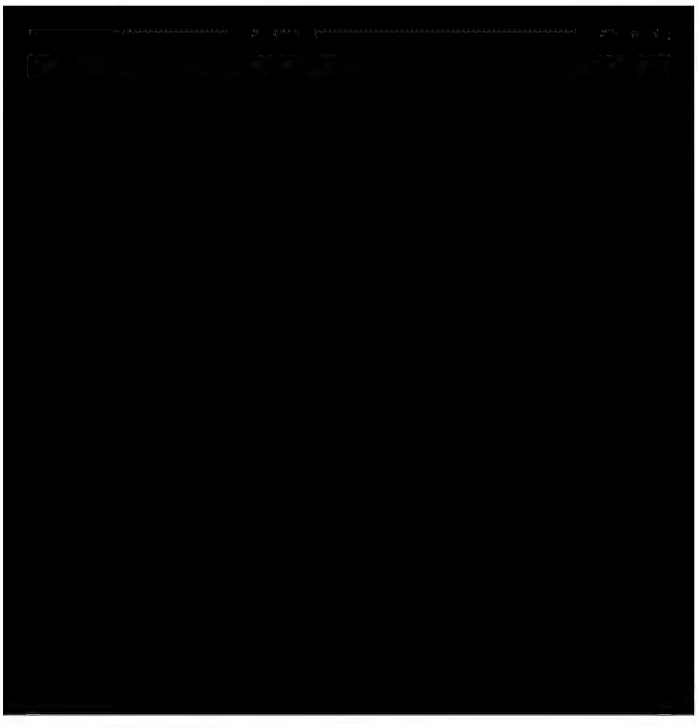
1. *forma quinina.* 2. *forma decimina.* 3. *forma rivularis*

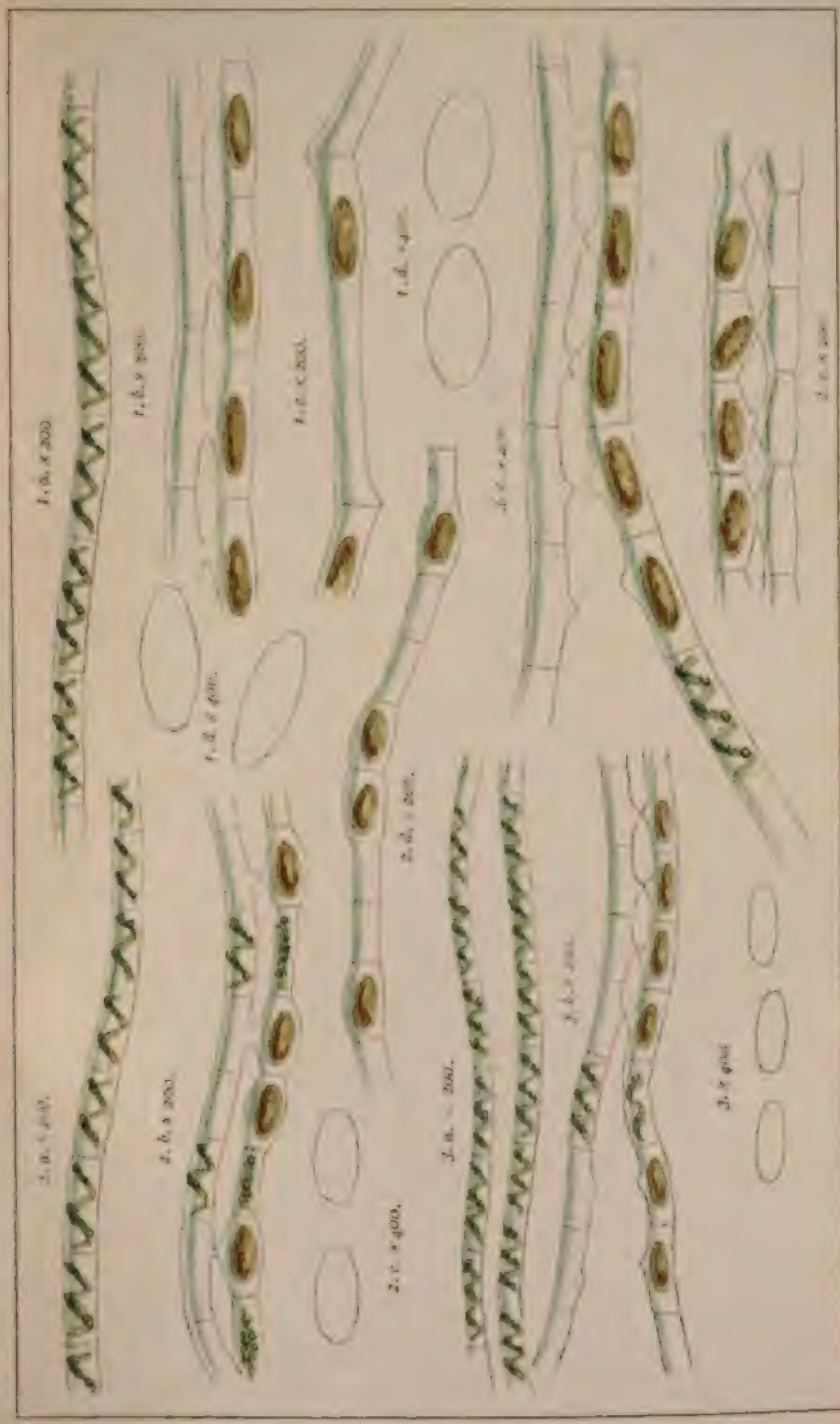




Spirogyra condensata. Vauch. 2. Spirogyra longata. Vauch.

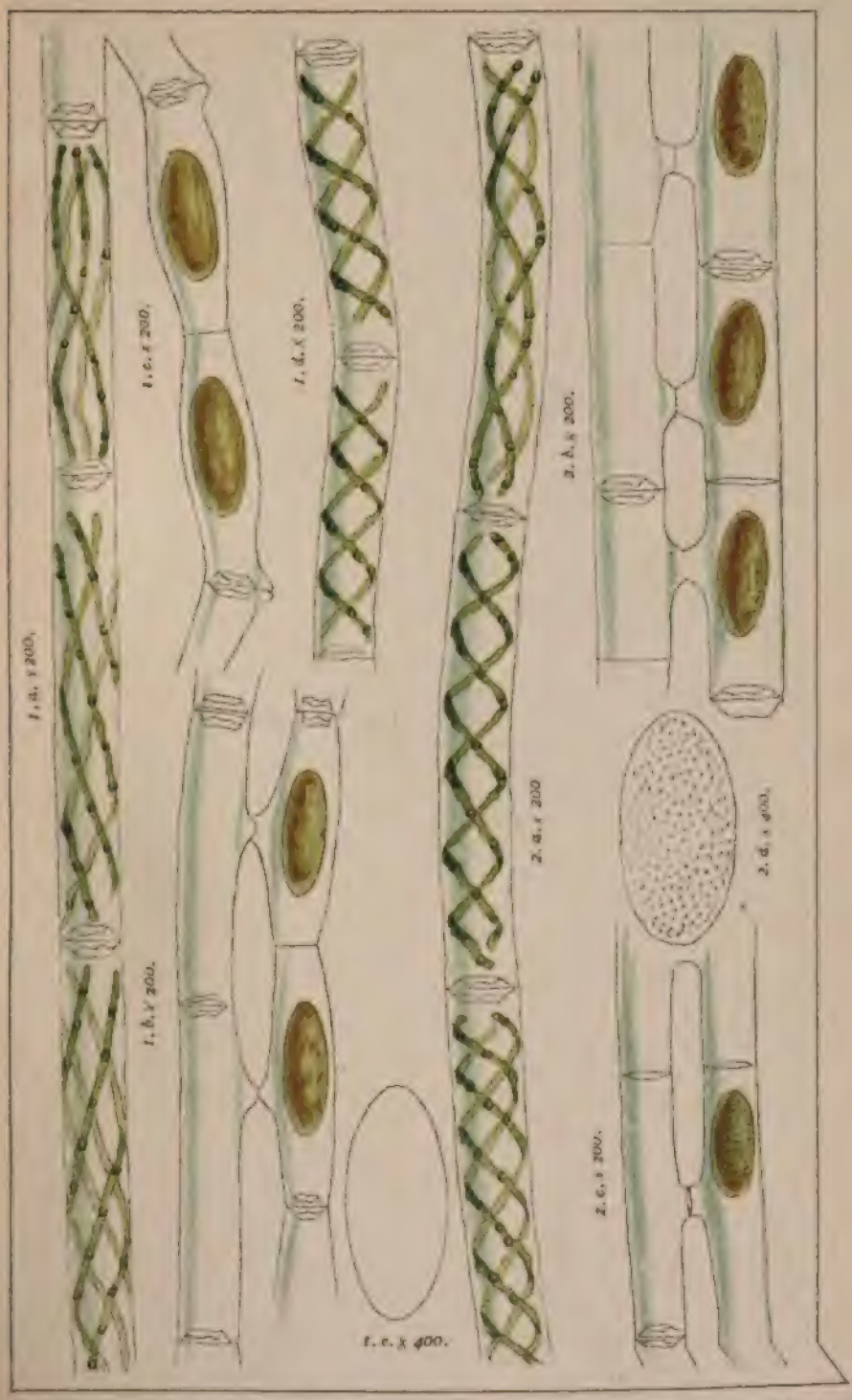




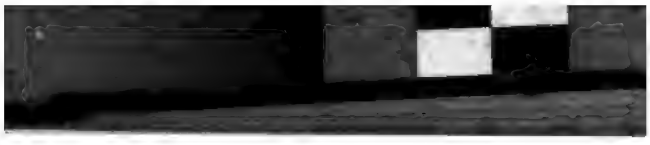


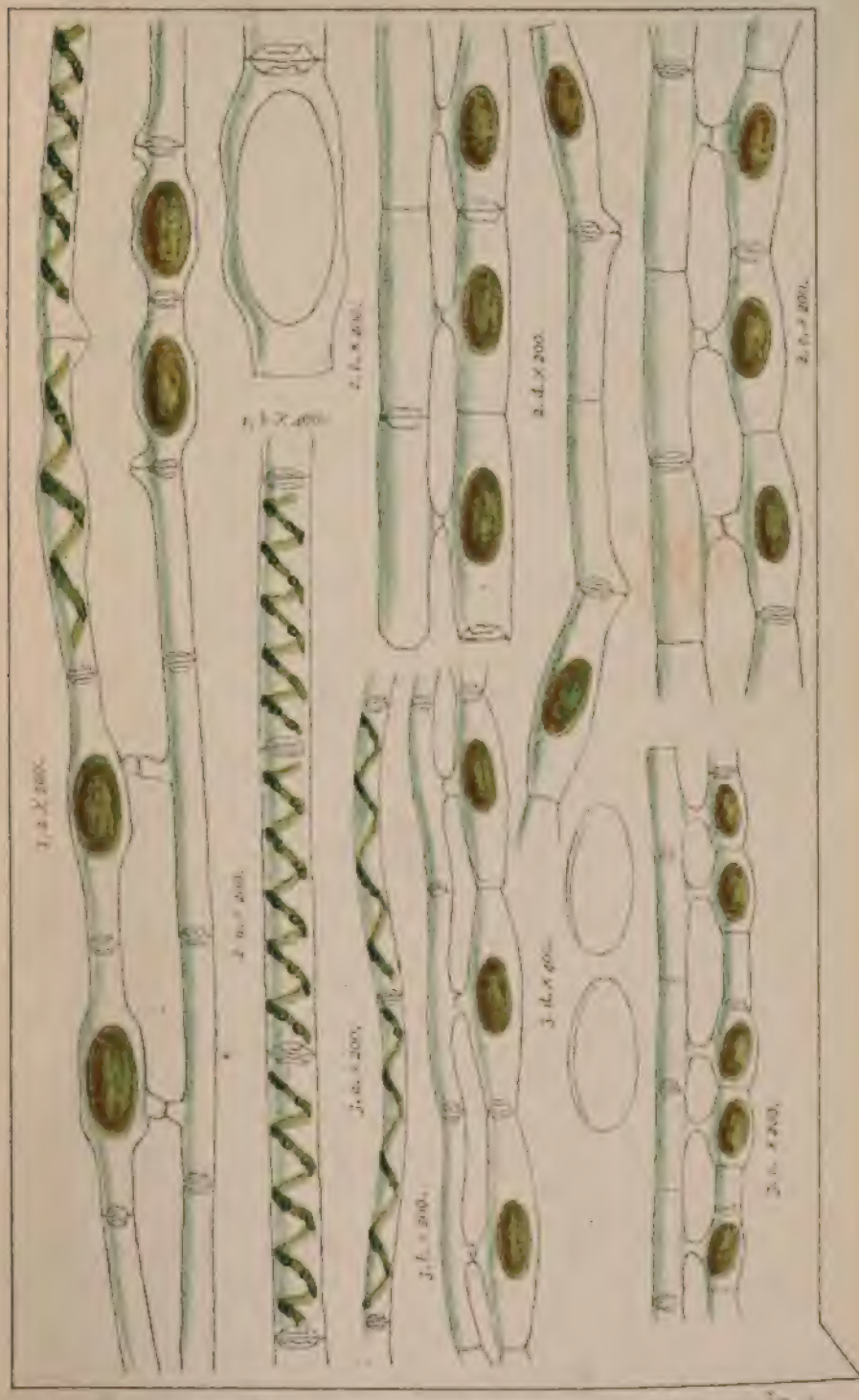
Spirogyra flavescens. Kütz.

1. var. *gracilis* 2. var. *flavescens* 3. var. *parvula*

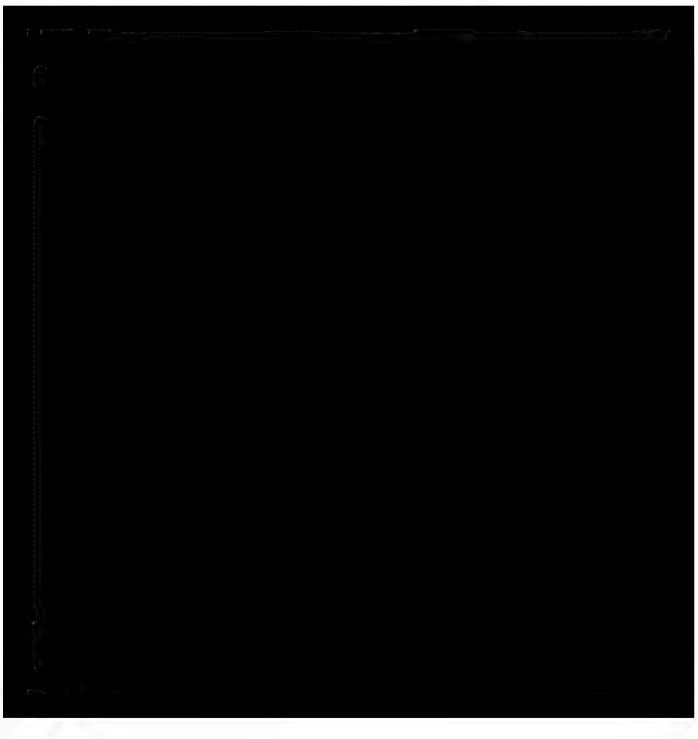


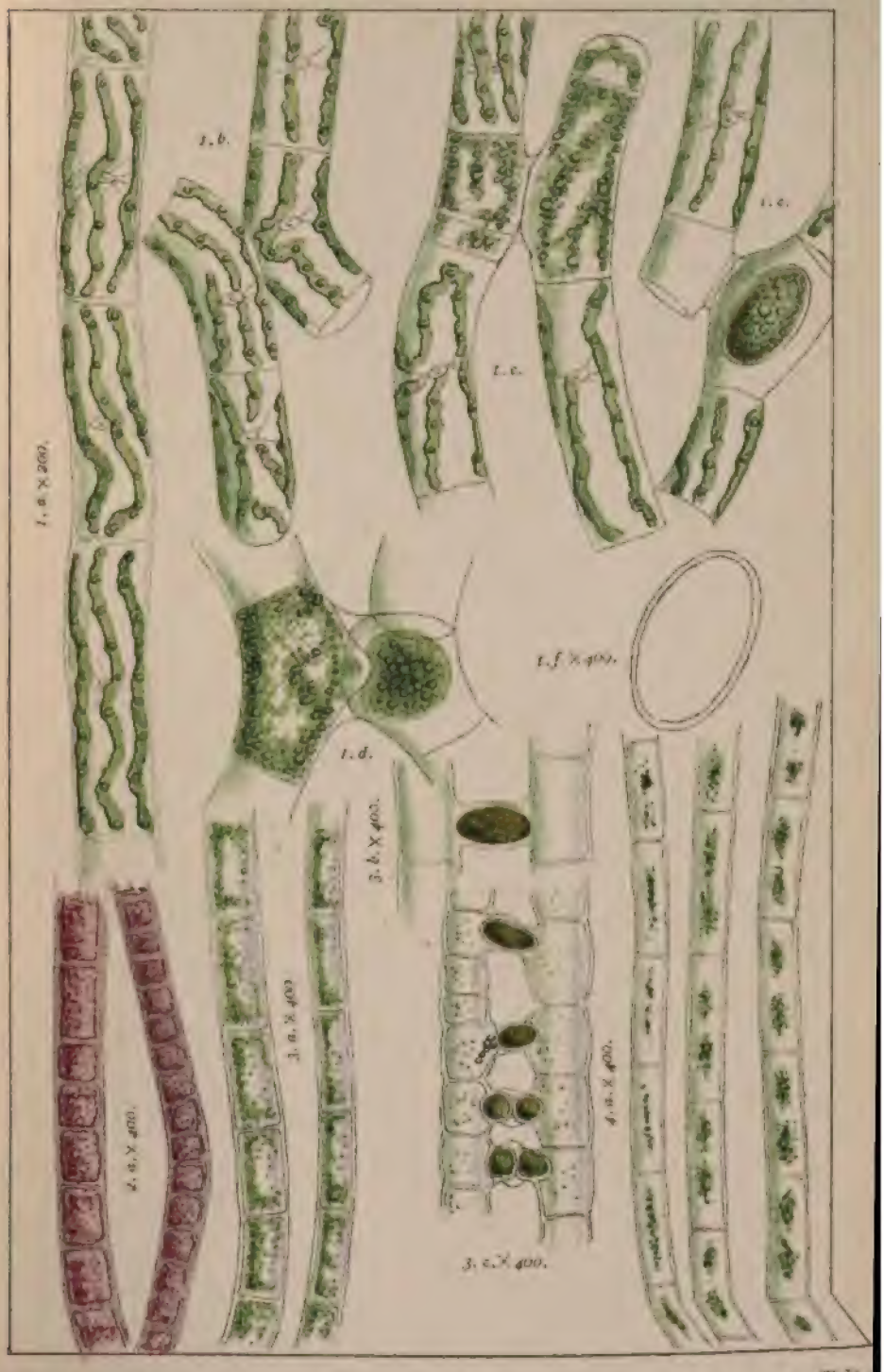
1. *Spirogyra insignis*, Hass. 2. Spirogyra calospora, Cleve.



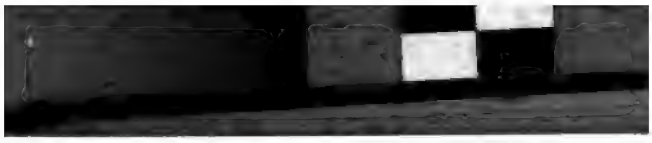


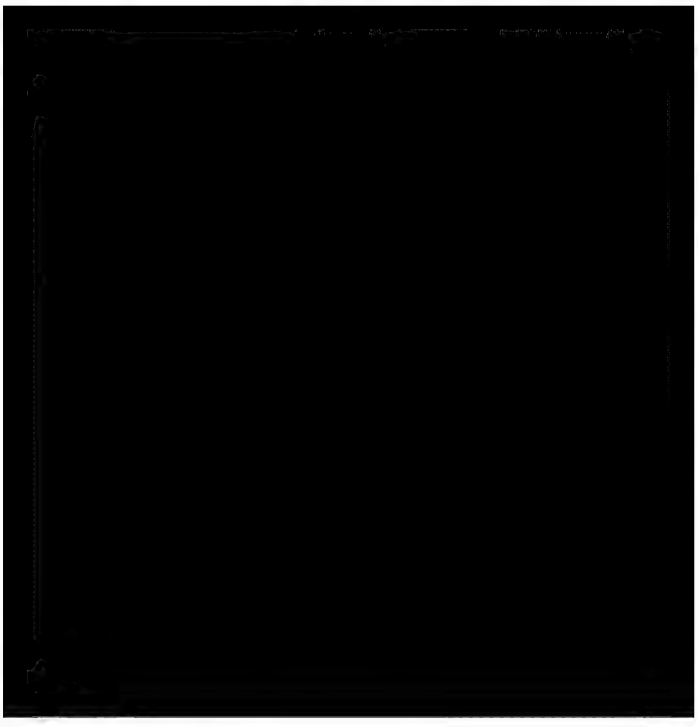
1. *Spirogyra quadrata.* Hass. 2. Spirogyra Weberi. Kutz.
3. *Spirogyra tenuissima.* Hass.

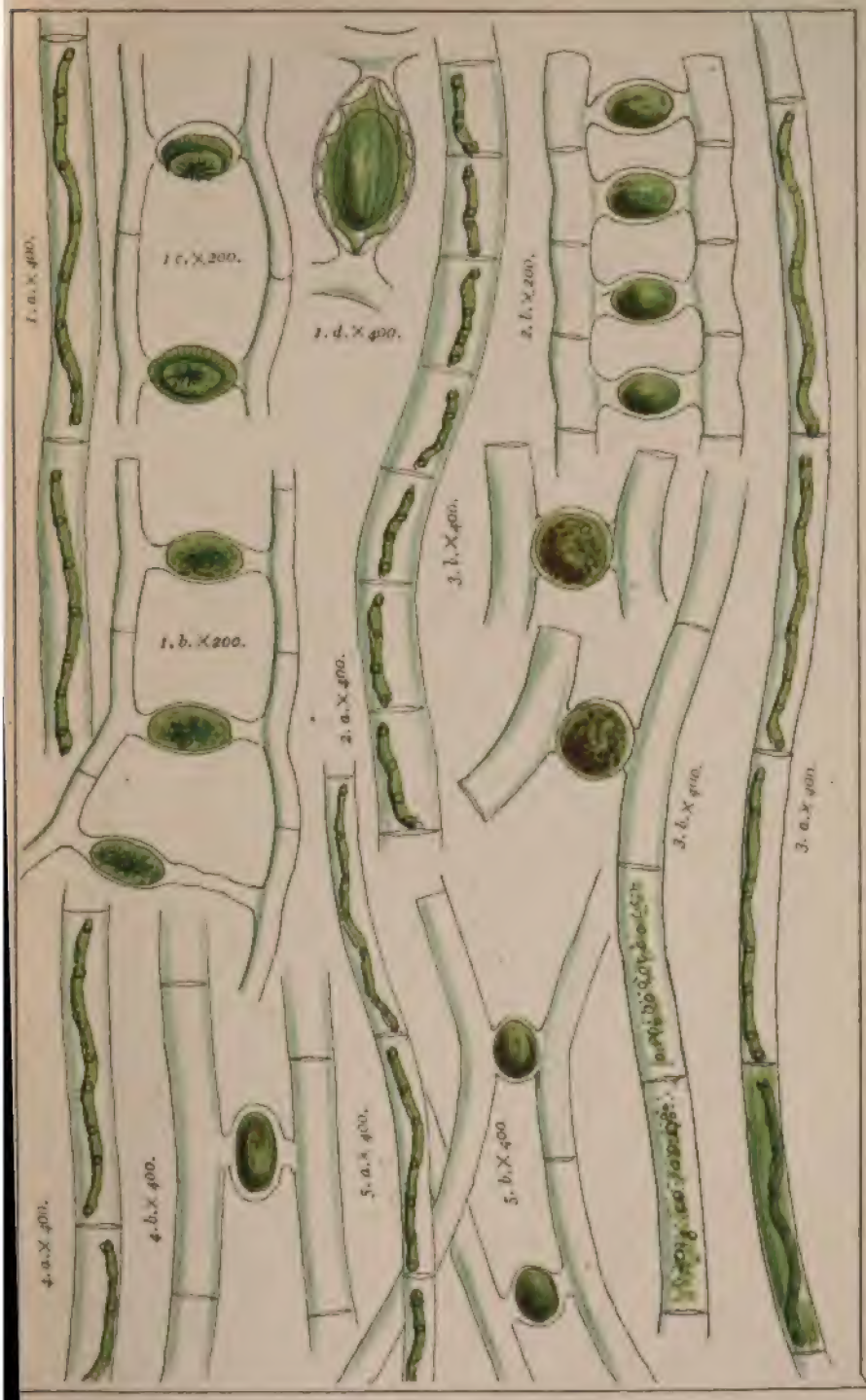




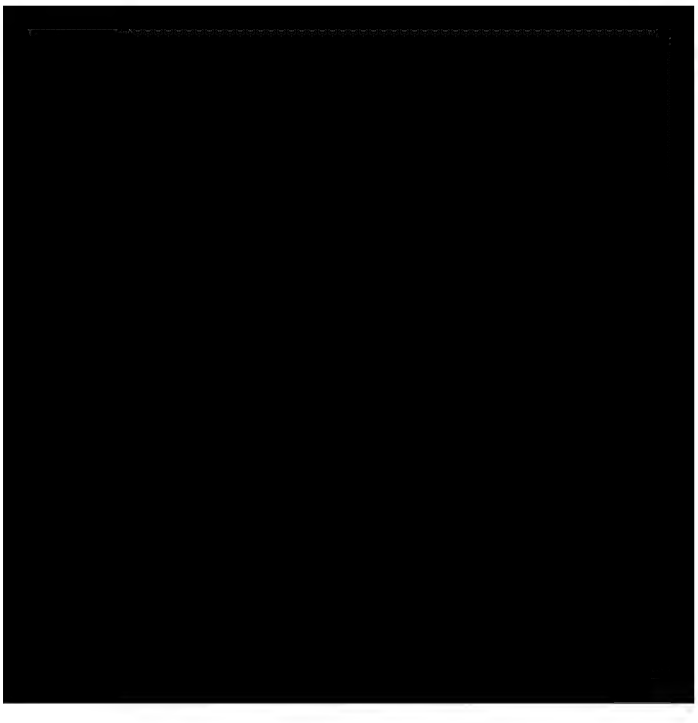
1. *Sirogonium sticticum. Kutz.* 2. Zygogonium ericetorum. Ⓓ Bk
3. *Z. ericetorum, var. aquaticum.* 4. Zygogonium gracile. Berk.

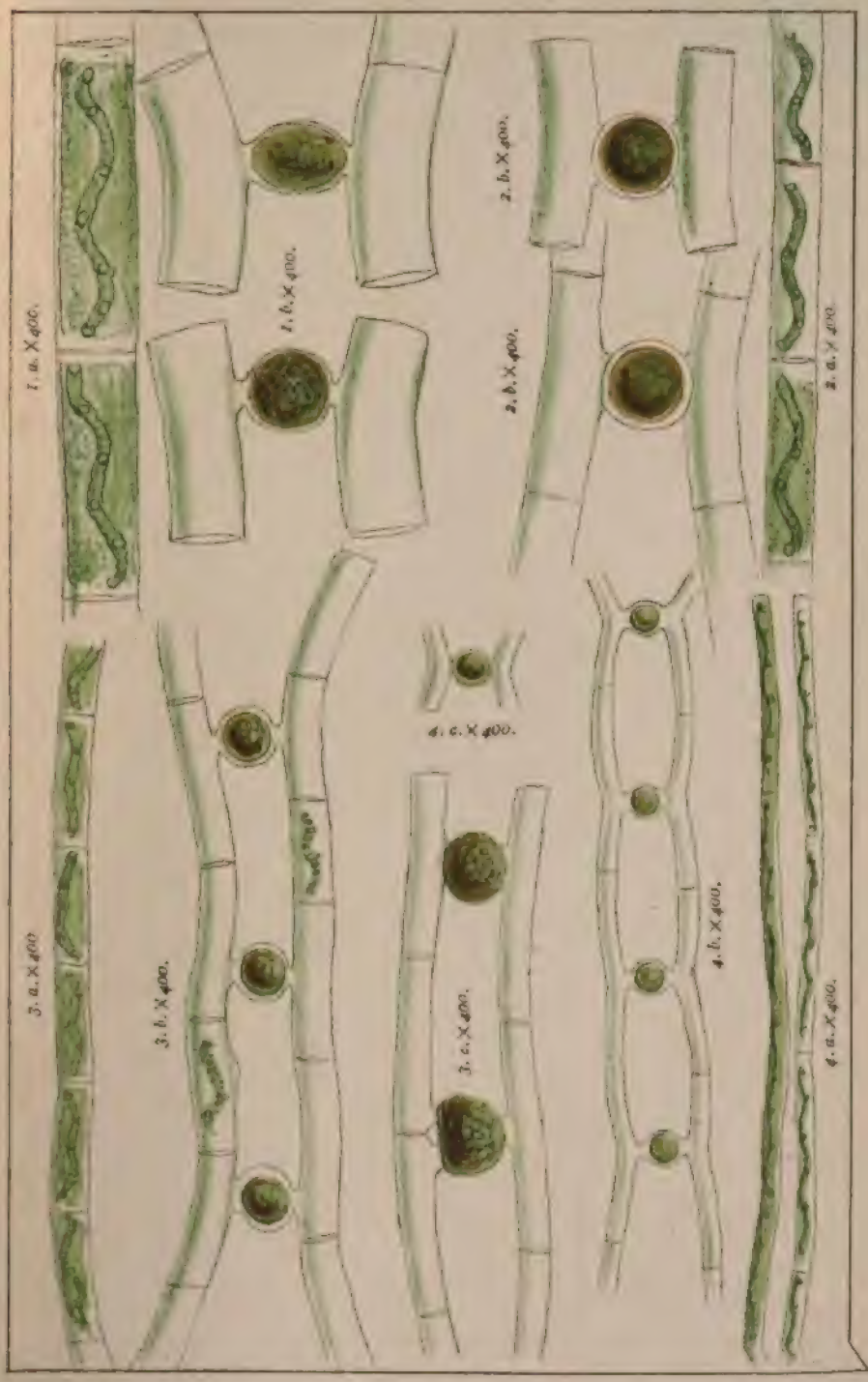




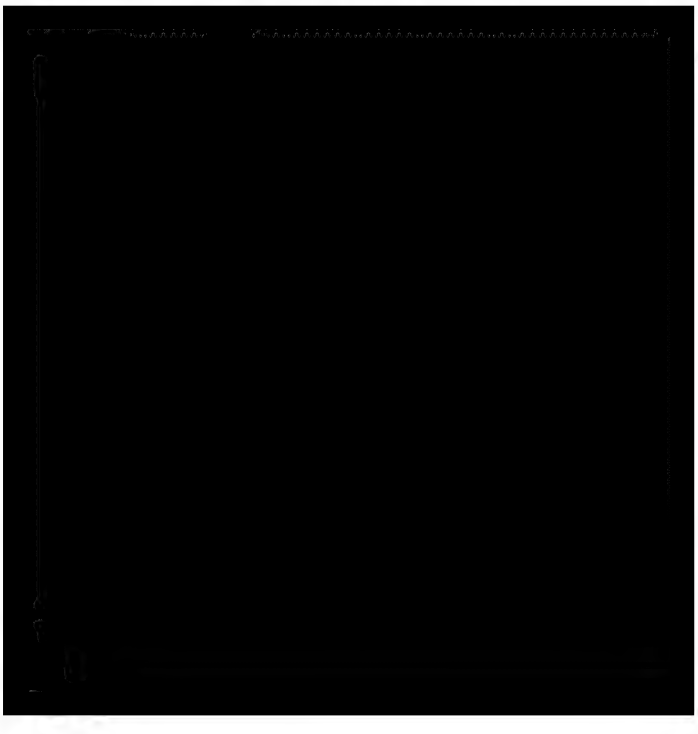


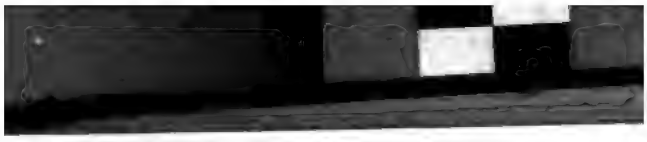
1. *Mougeotia glyptosperma.* DBy. 2. *Mougeotia lævis.* Archer.
3. *Mesocarpus muramuloides.* Hass. 4. *Mesocarpus depressus.* Hass.
Mesocarpus depressus, var. ovalis.

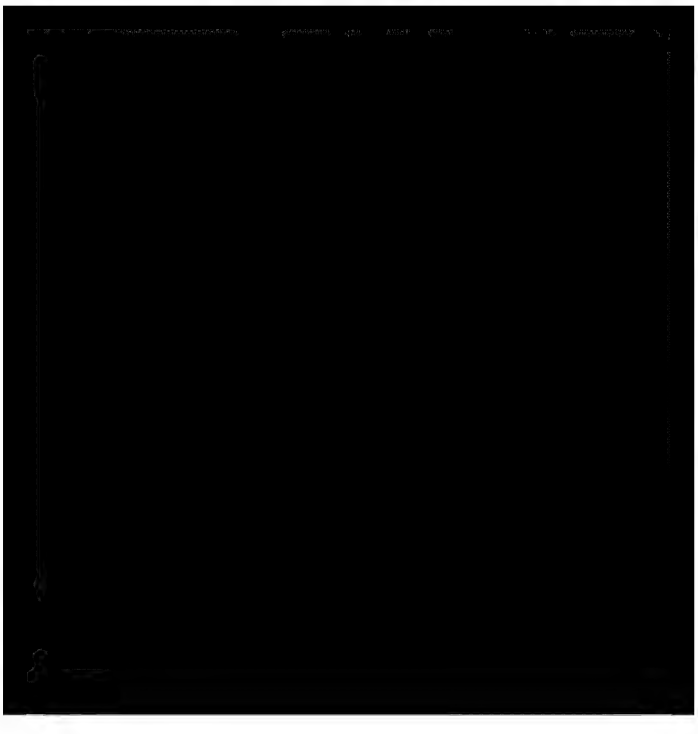


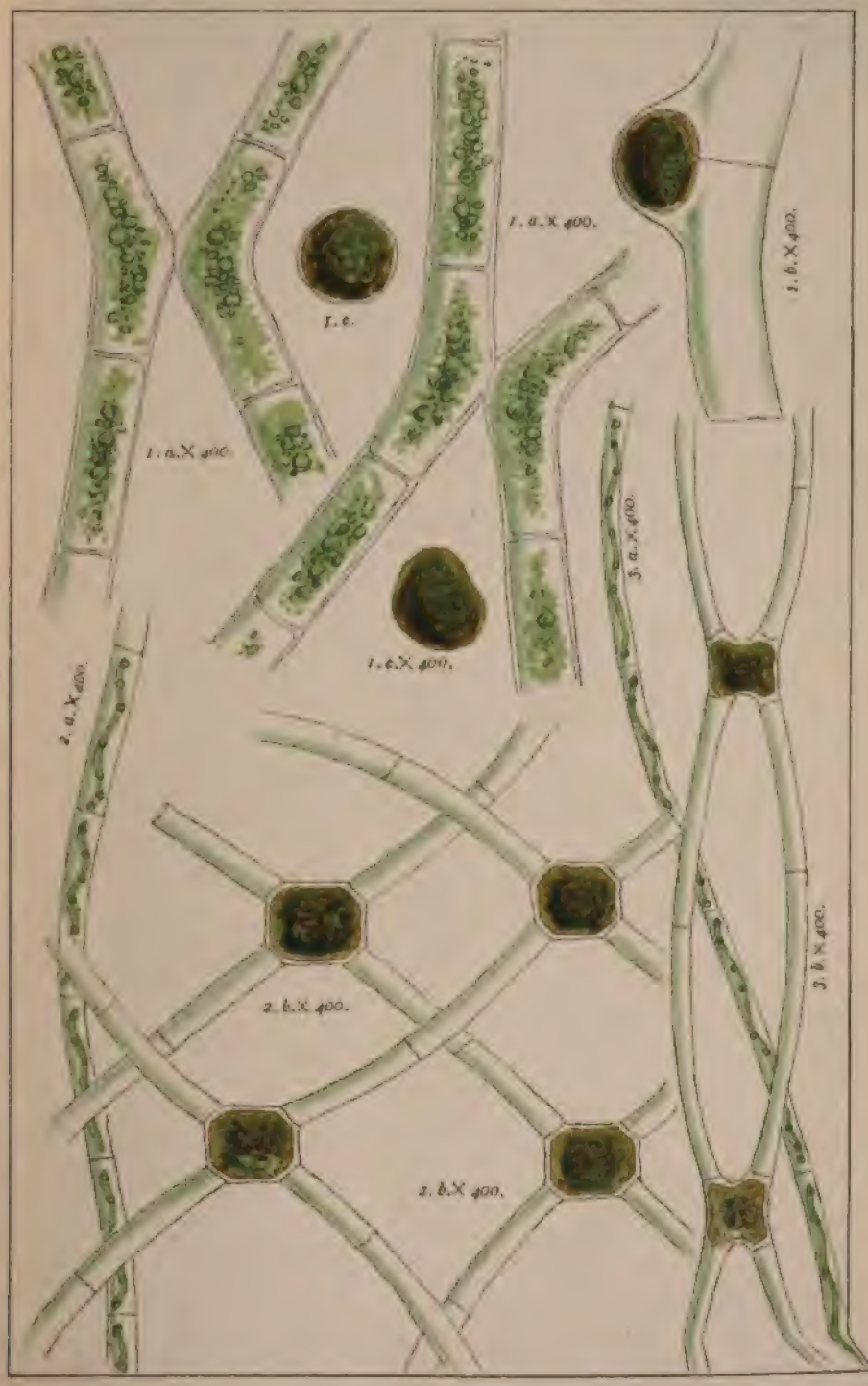


1. *Mesocarpus scalaris. Hass.* 2. *Mesocarpus recurvus. Hass.*
3. *Mesocarpus parvulus. Hass.* 4. *M. parvulus*, var. *angustus. Ha*

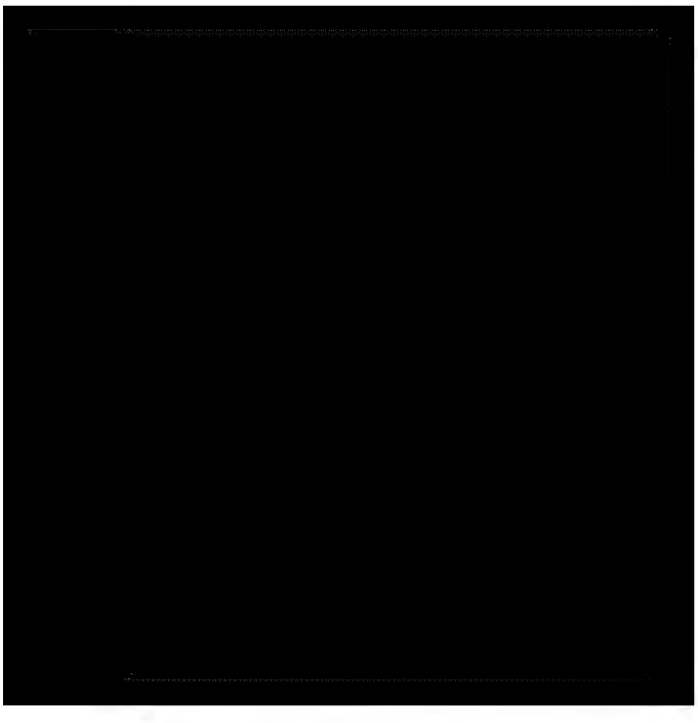


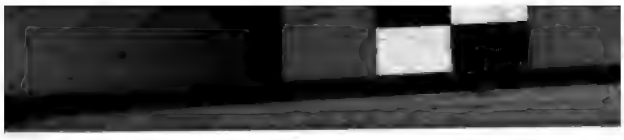


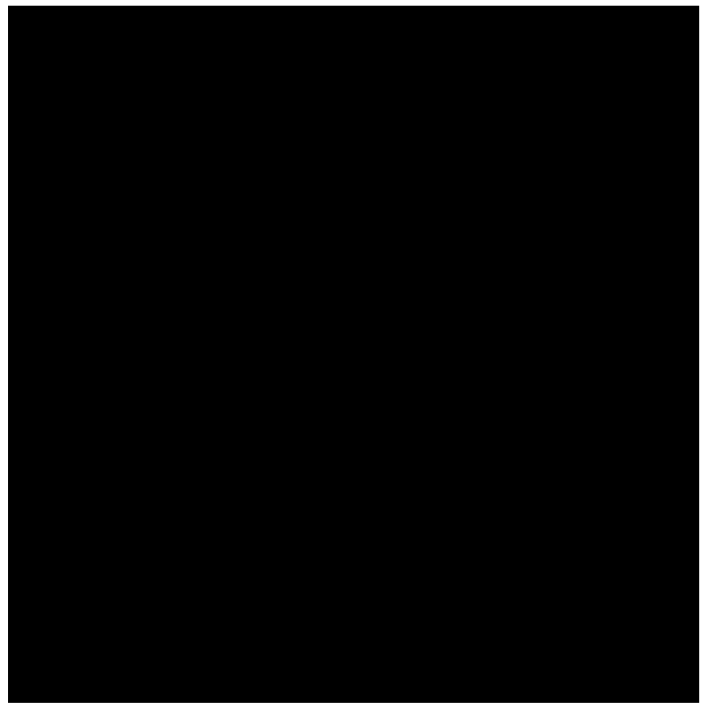


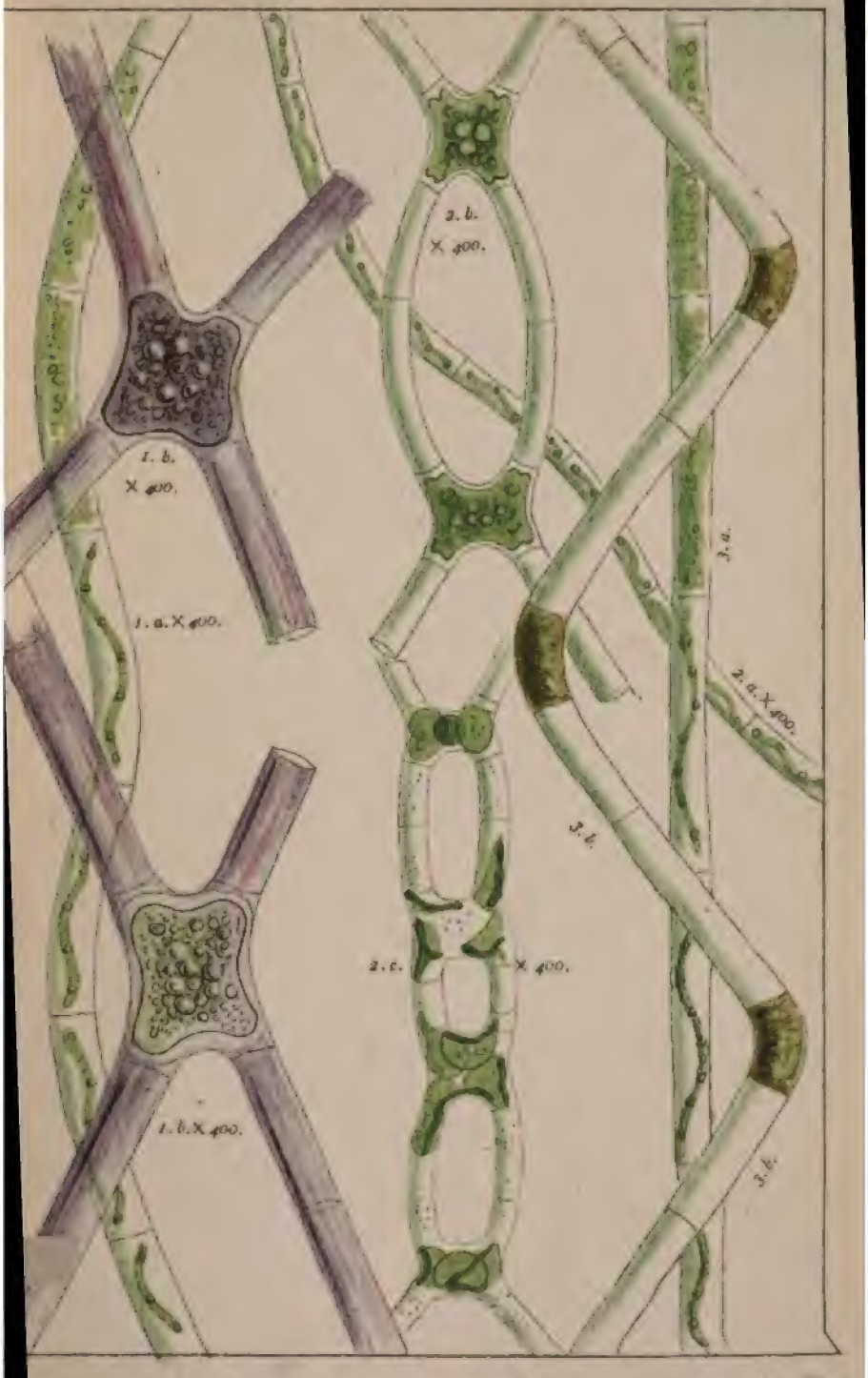


1 *Mesocarpus pleurocarpus.* (D.By. 2. Staurospermum quadratum. H
3. *Staurospermum gracillimum.* Hass.

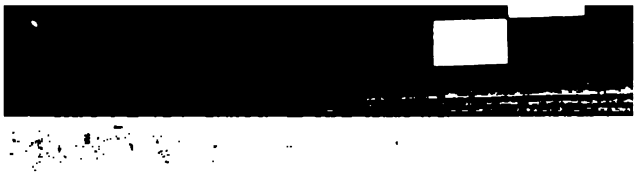


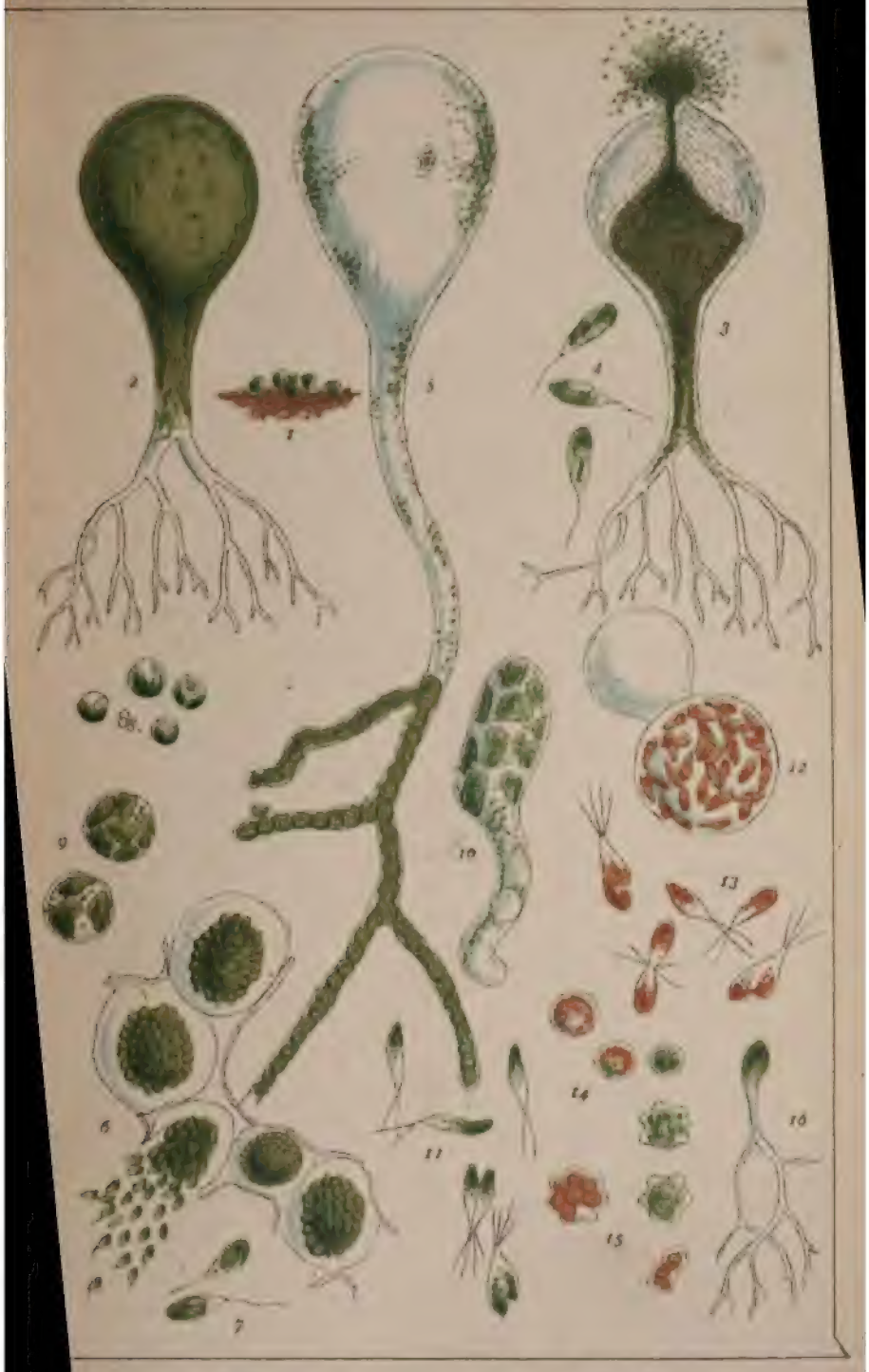




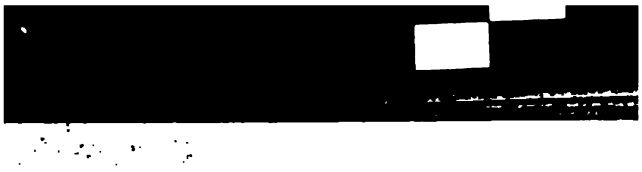


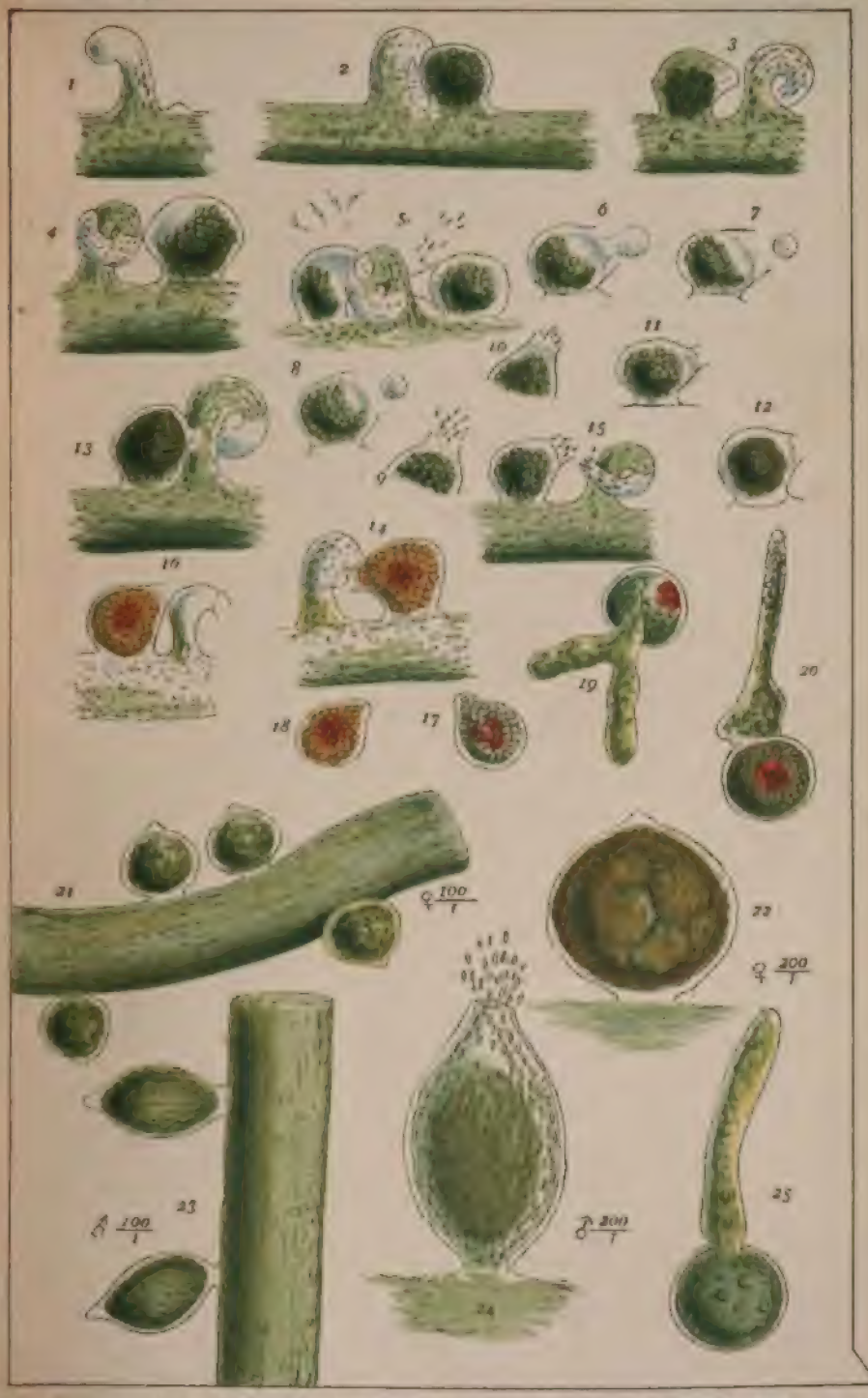
Staurospermum sapucinum. Bory. 2. Staurospermum viride. Kutz.
3 Gonatonema mirabile. Hass.



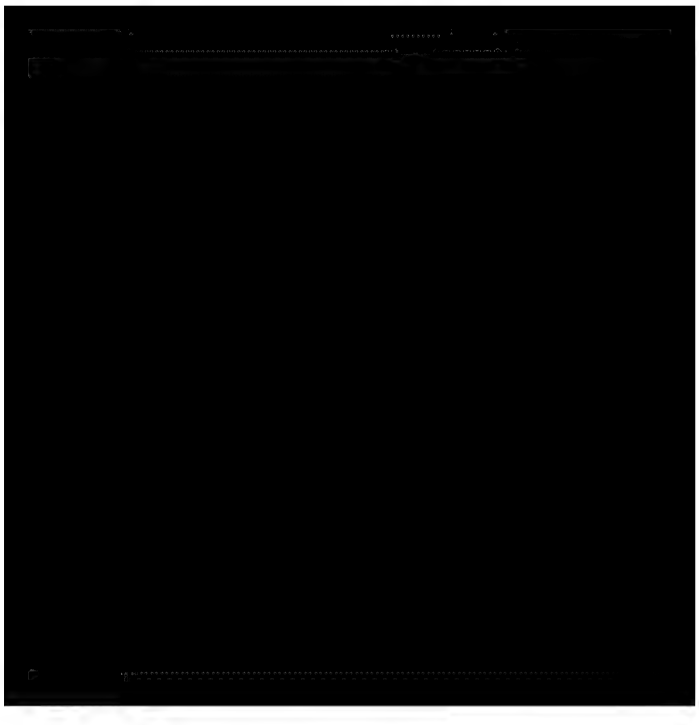


Botrydium granulatum, after Woronin.

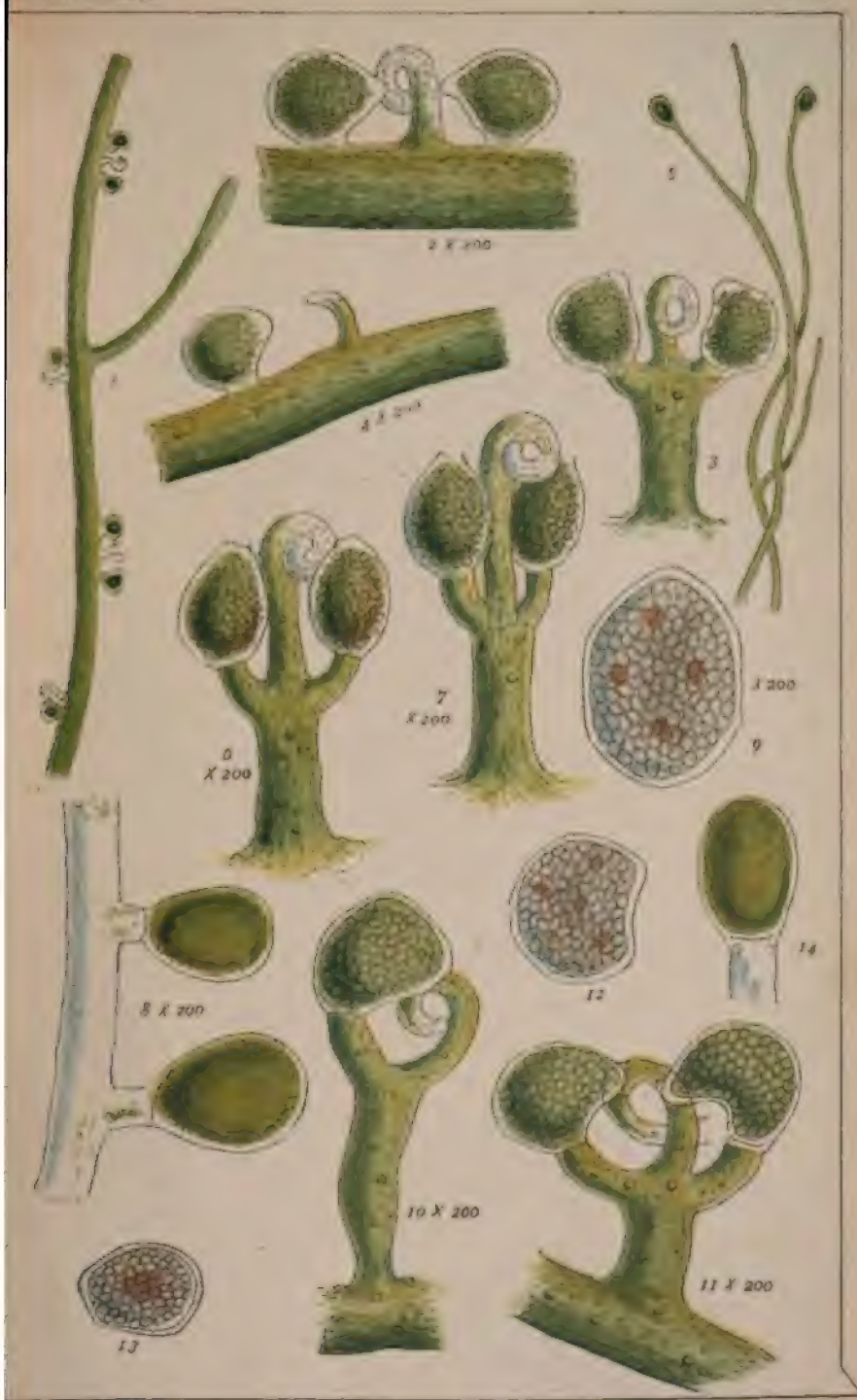




1.-20. Impregnation of Vaucheria sessilis. 21.-25. Vaucheria dichotoma. L

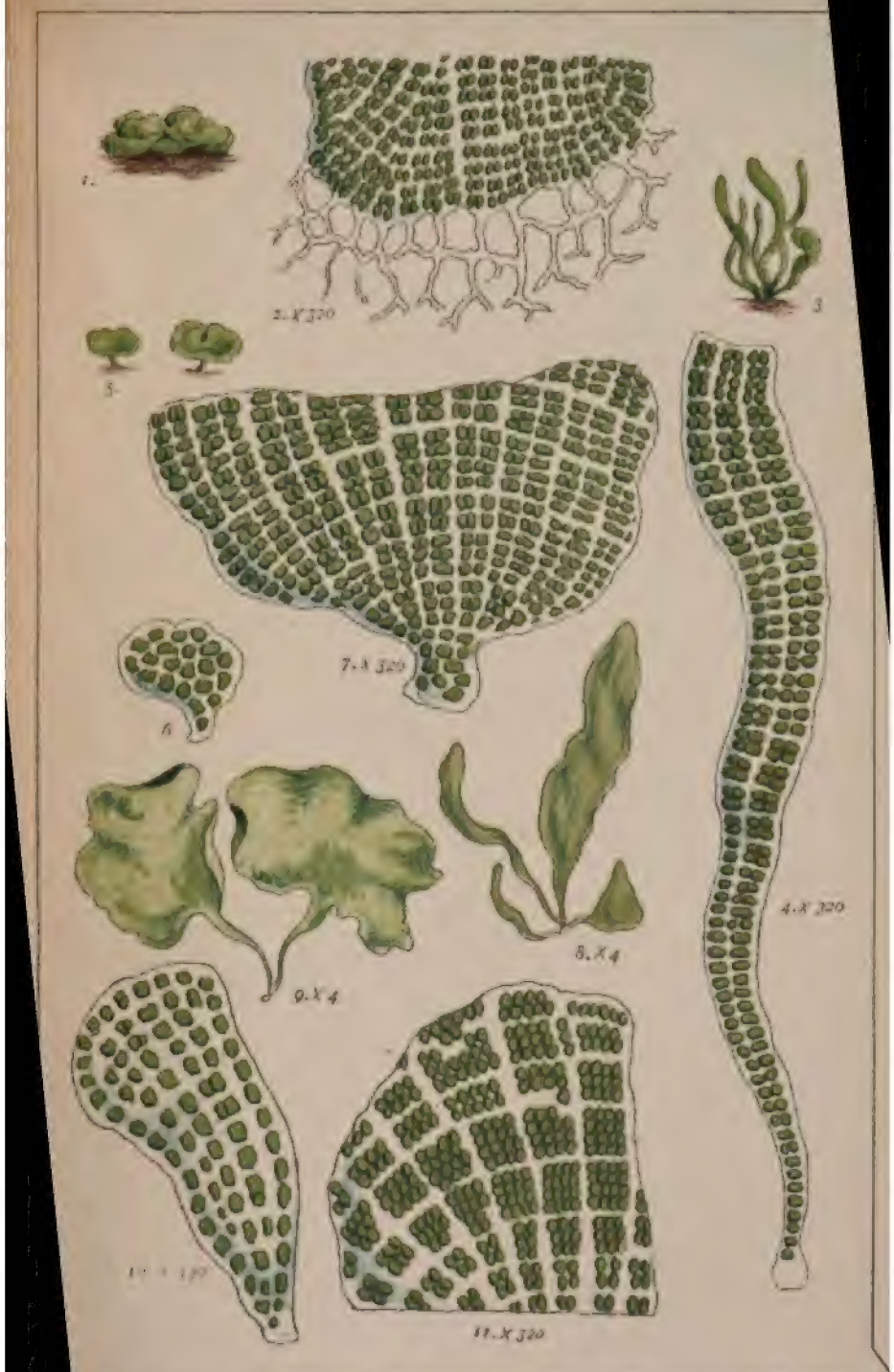


1-3 Vaucheria aversa. Hass. 4.-5. Vaucheria sericea. Lyngb.
9.-13. Vaucheria (Dillwynii) Ag.

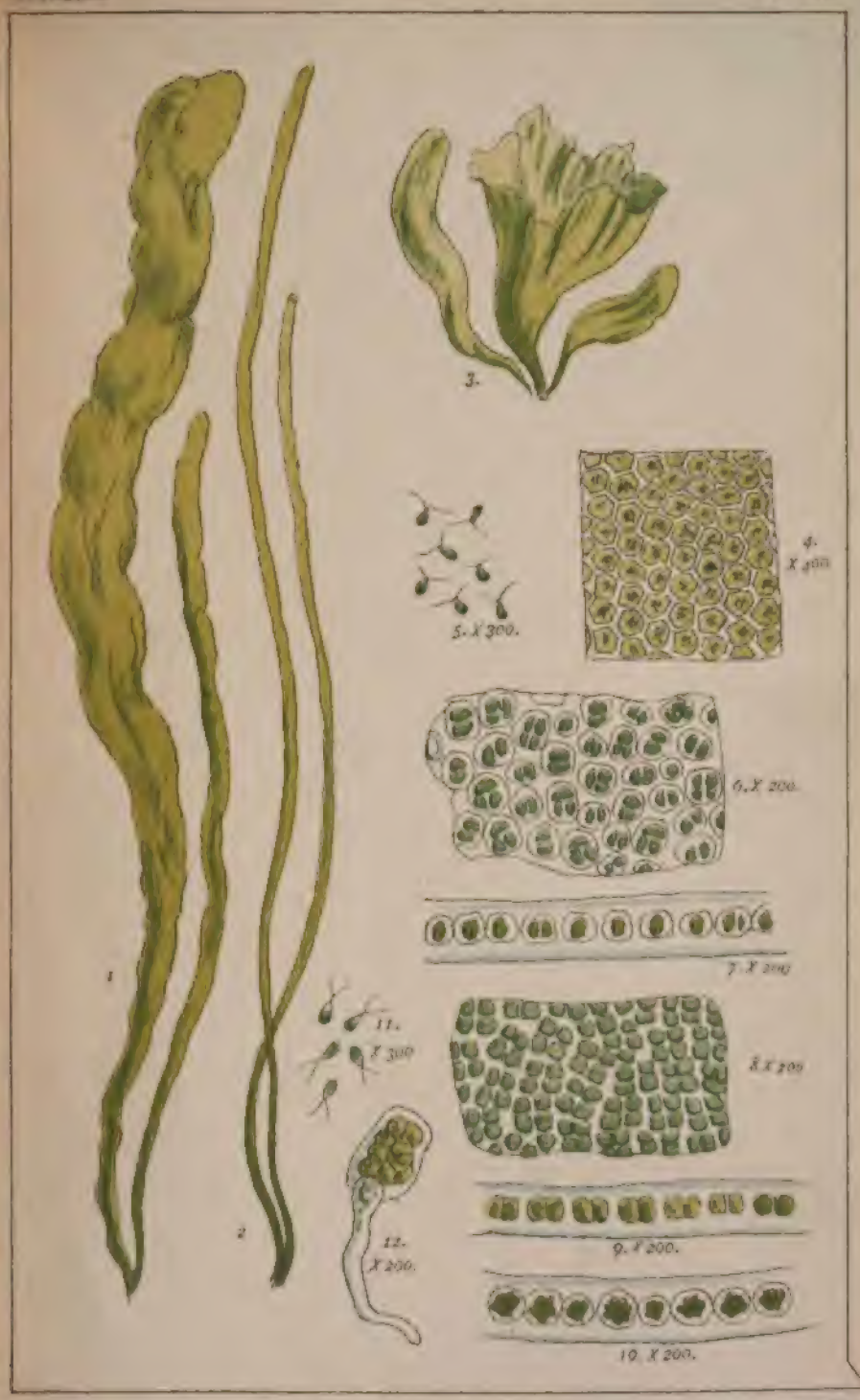


1-8. *Vaucheria sessilis*. Vauch. 5. cæspitosa. 4. repens. 5. sporangium
1-9. *Vaucheria geminata*. DC. 10.-14. Vaucheria hamata. Lyn

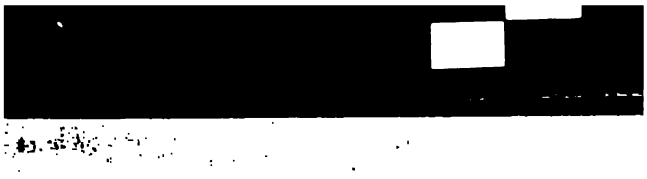
1-3 *Vaucheria terrestris*. Lyngb.
4. Vaucheria racemosa. Hass.
5-6. *Vaucheria submarina*. Berk.
7. Vaucheria velutina. Ag.

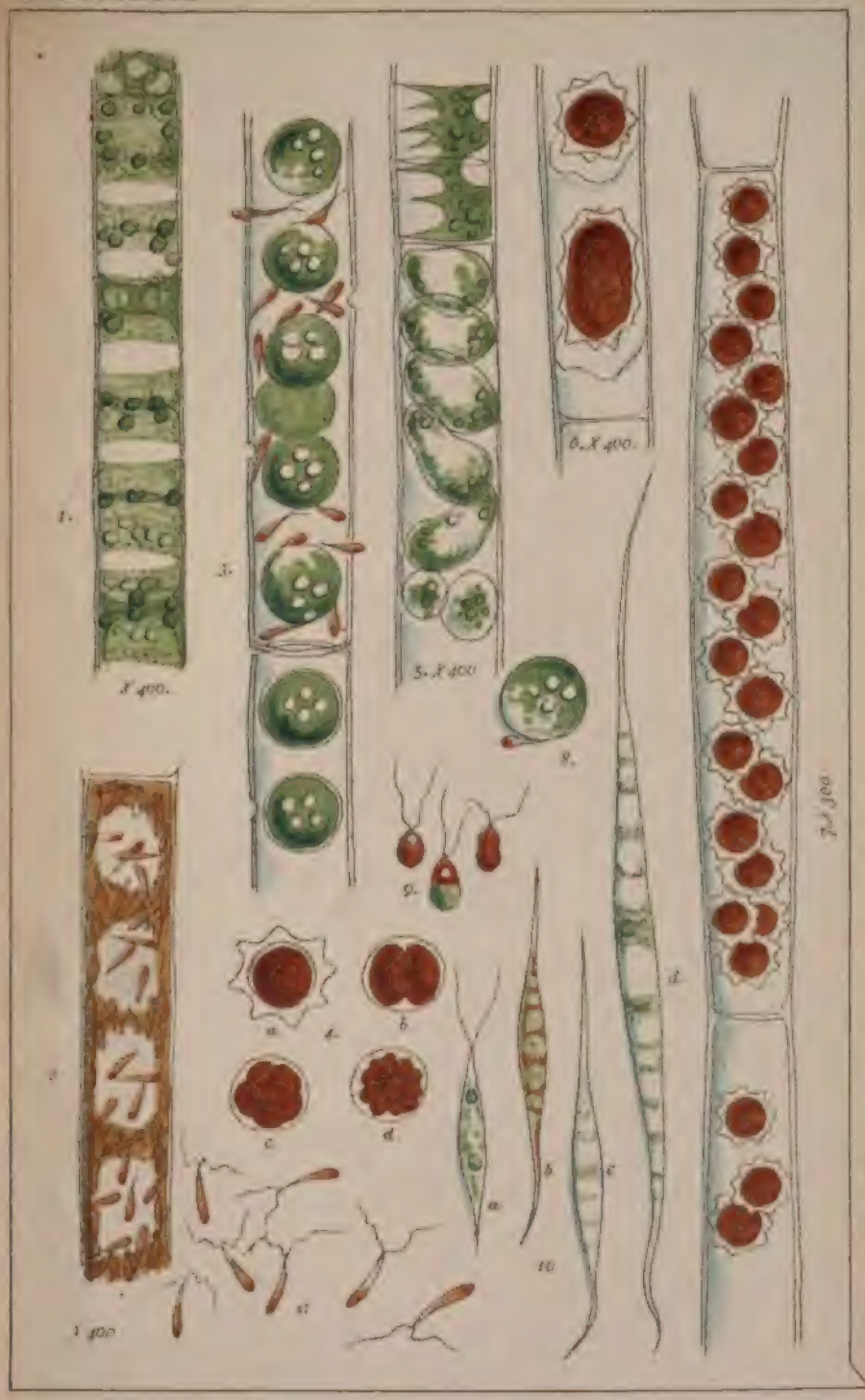


1.-2. *Prasiola crispa. Ktz.* 3.-4. Prasiola calephylla. Carm.
5.-7. *Prasiola furfuracea. Men.* 8.-11. Prasiola stipitata. Suhr.

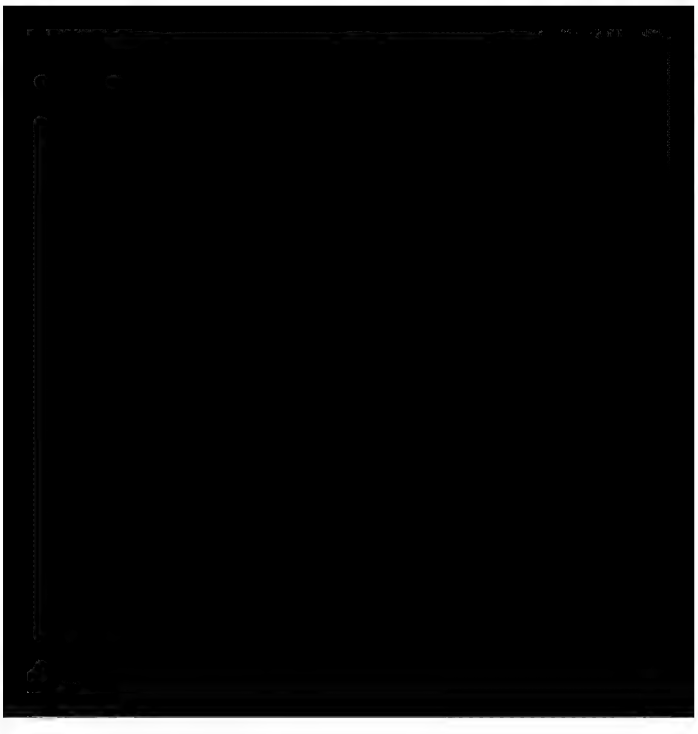


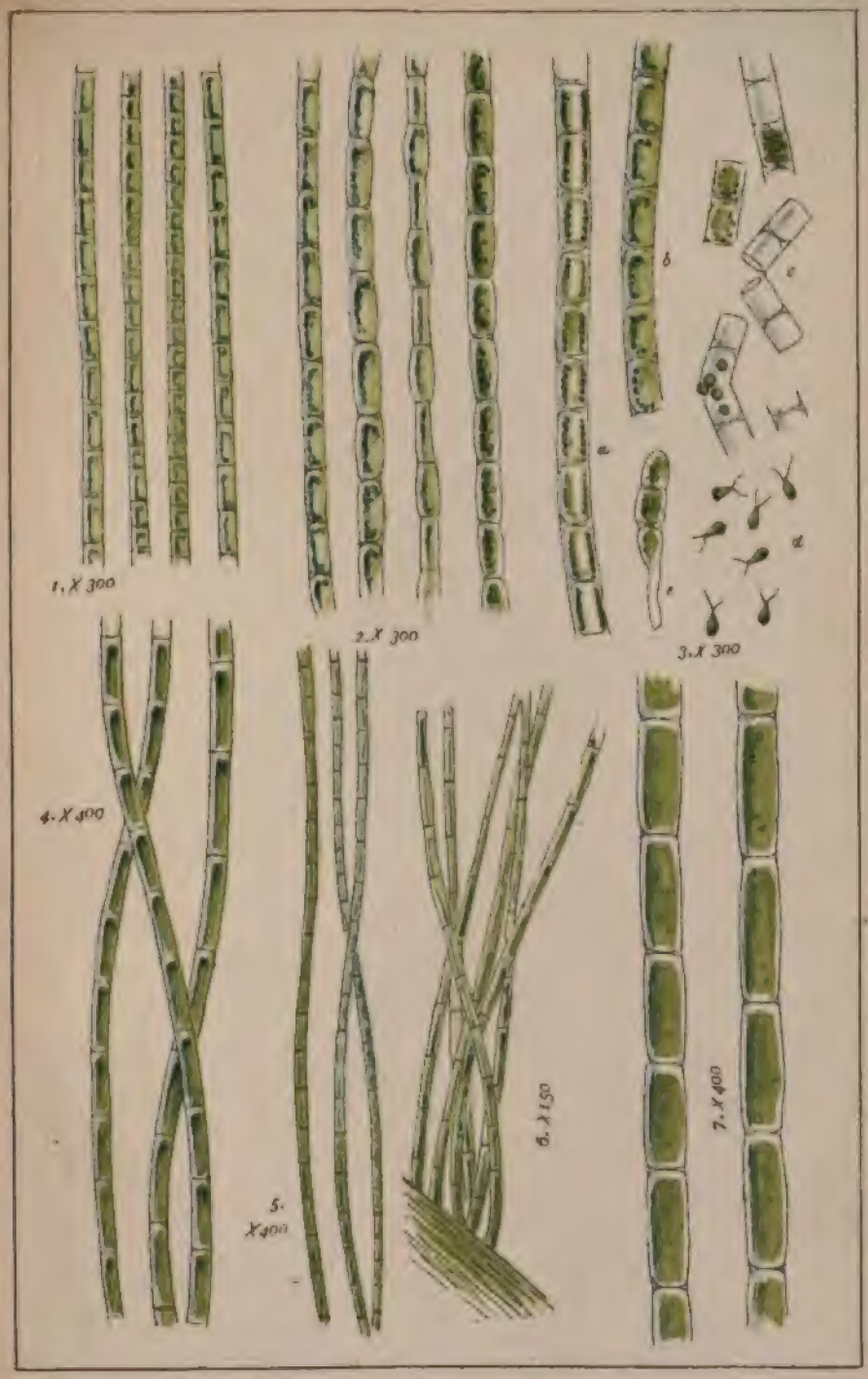
1.-5. *Enteromorpha intestinalis*, L. 6.-7. Monostroma laceratum, Thur.
8.-12. Monostroma Wittrockii, Born.



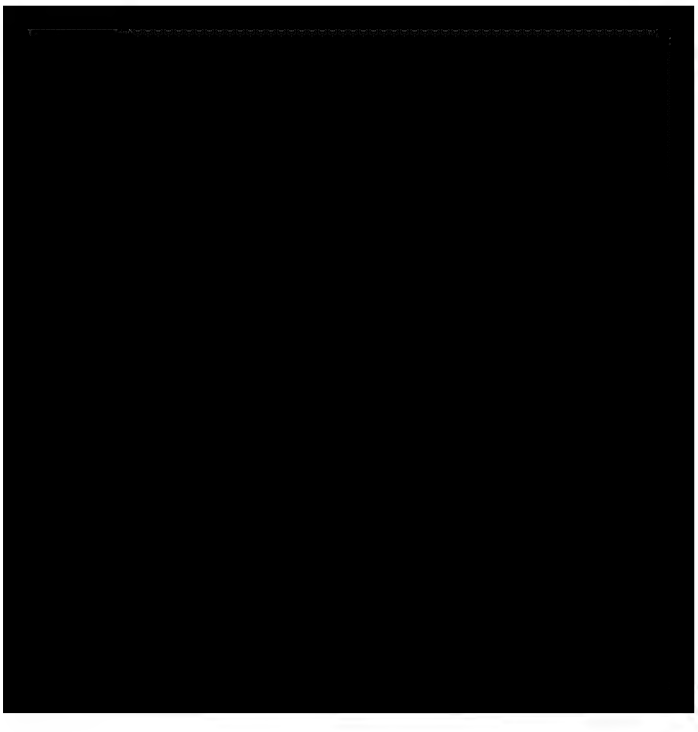


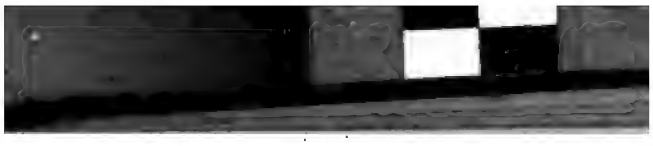
Sphœroplea annulina Ags. X 400.

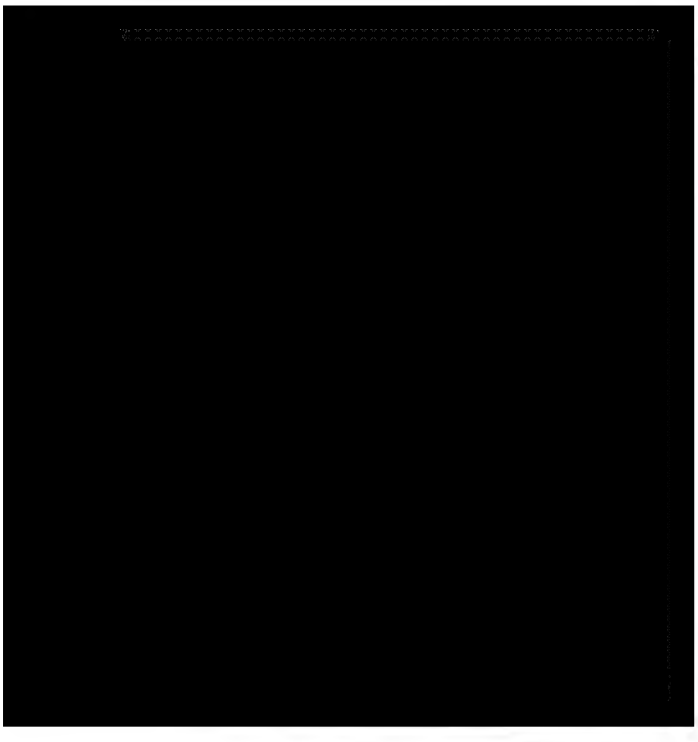


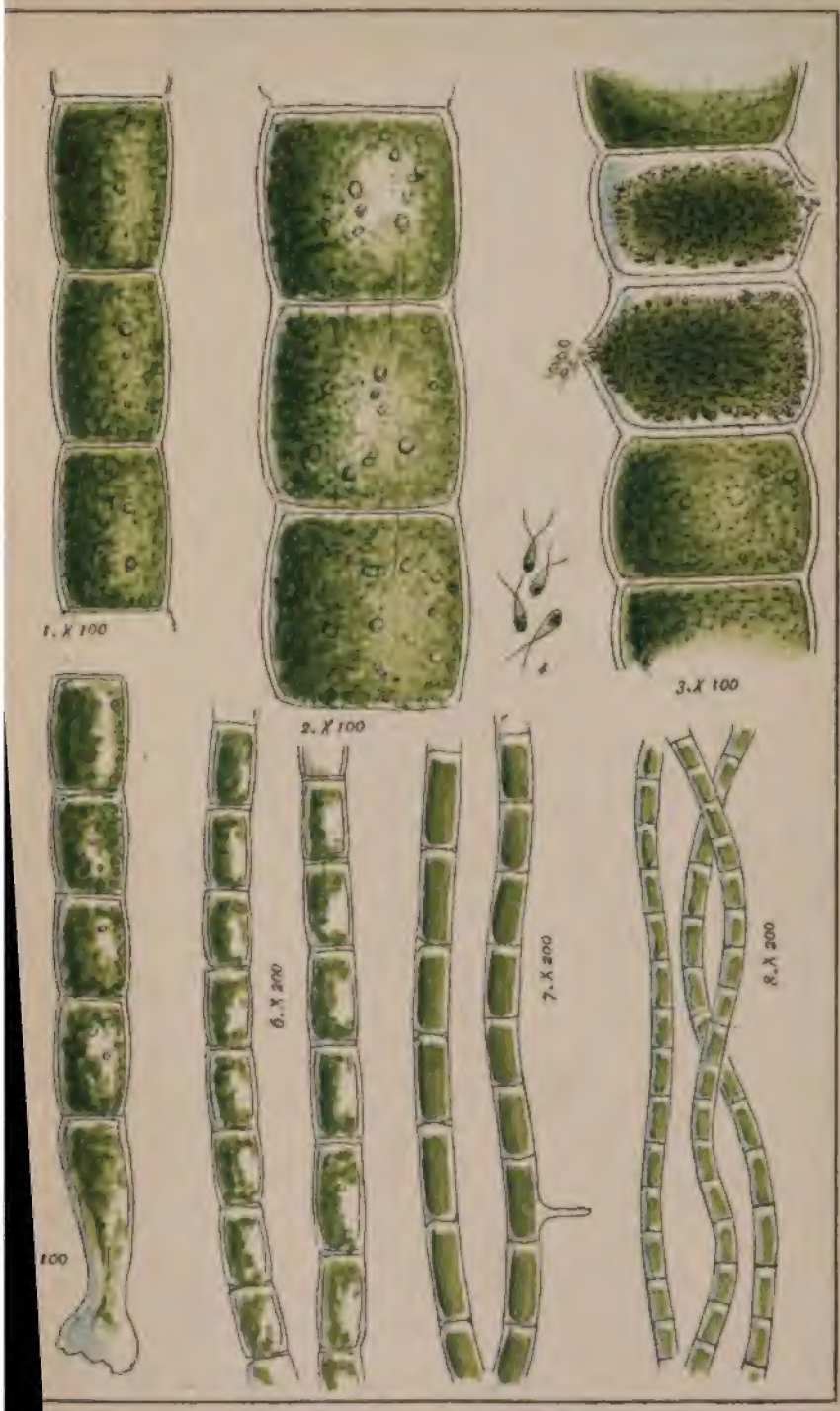


1. *Microspora fugacissima* Thur. 2. Microspora vulgaris. Rabh.
3. *Microspora floccosa*. Thur. 4. Conferva bombycina. Ag
5. *Conferva tenerrima* Kutz 6.-7. Conferva fontinalis. Berk.



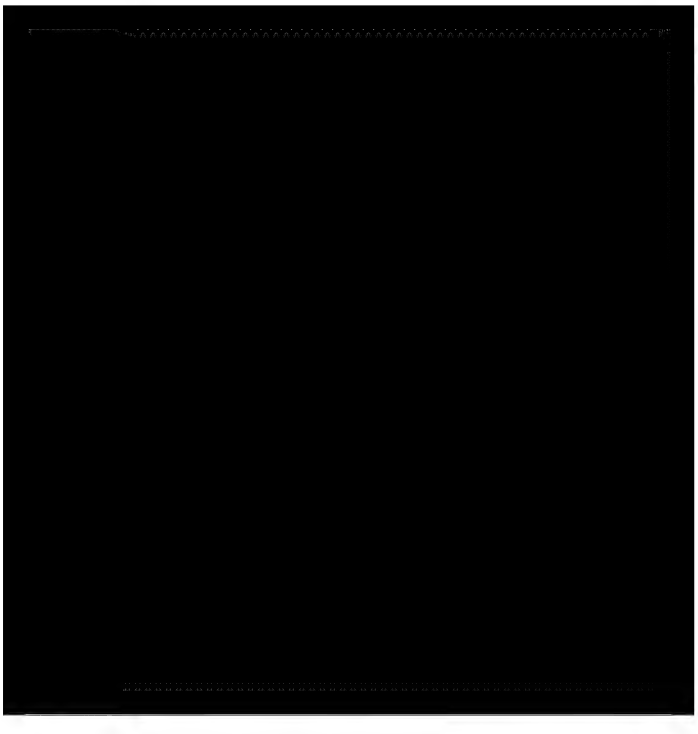


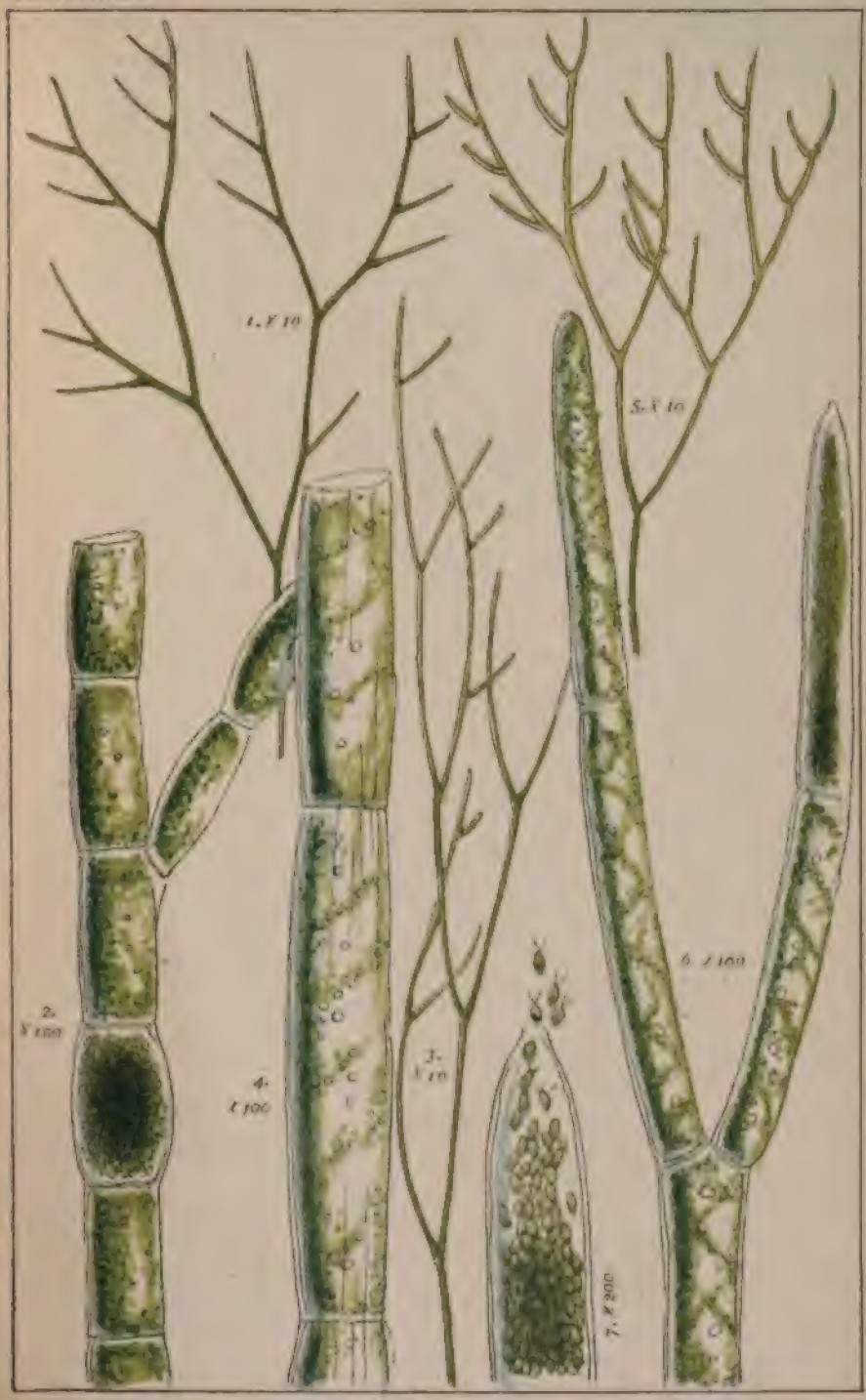




hætomorpha litorea. Harv.
tomorpha sutoria. Berk.
zoclonium Casparyi. Harv.

2.-4. Chætomorpha linum. K.
6. Chætomorpha implexa. Lilliw.
8 Rhizoclonium flavicans. Jurg

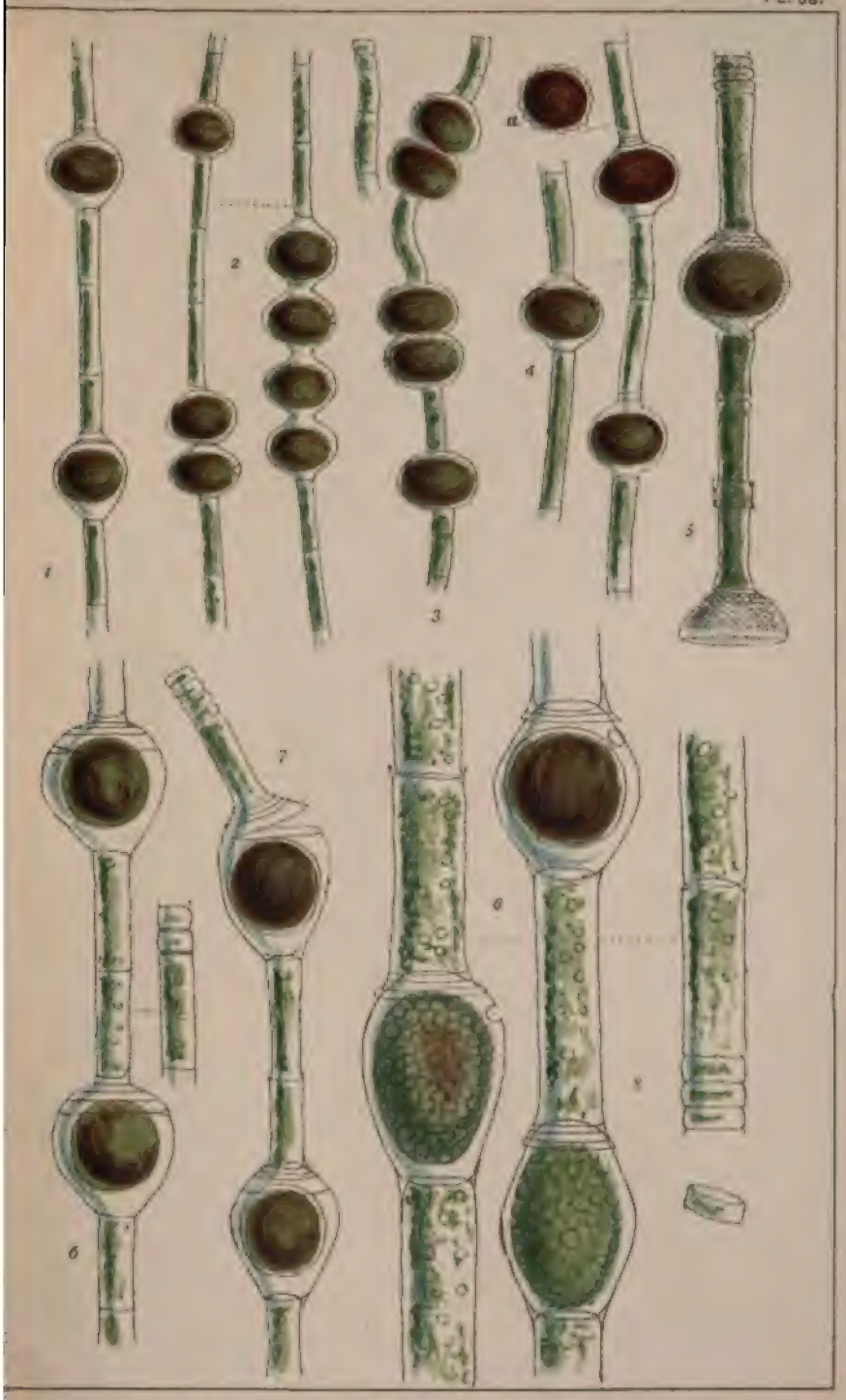




1.-2. *Cladophora fracta* K. 3.-4. *Cladophora crispata*. K.
5. 7. *Cladophora flavescens*. Ag

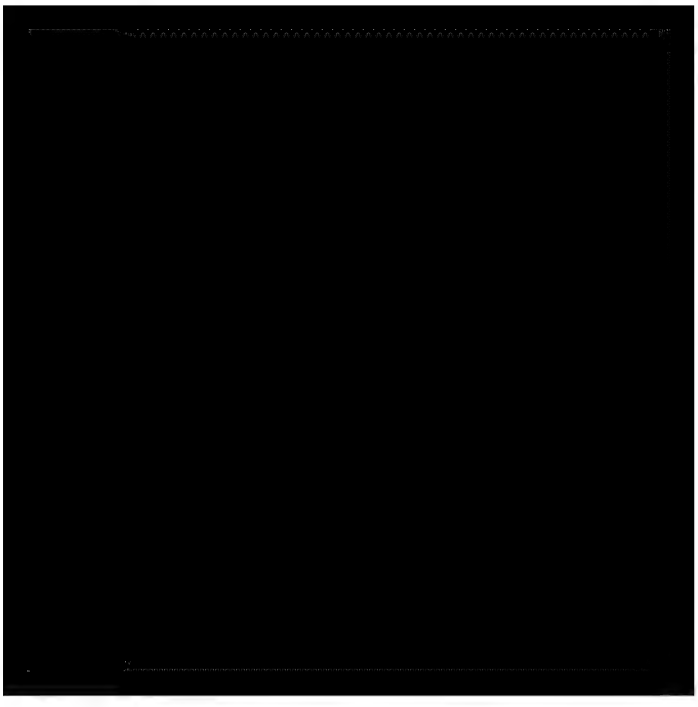
1.-4. *Cladophora glomerata* L. 5 *Cladophora canalicularis* Kutz.
6.-7. *Cladophora aegagropila* L. 8.-11 *Pithophora kewensis* Wittr.

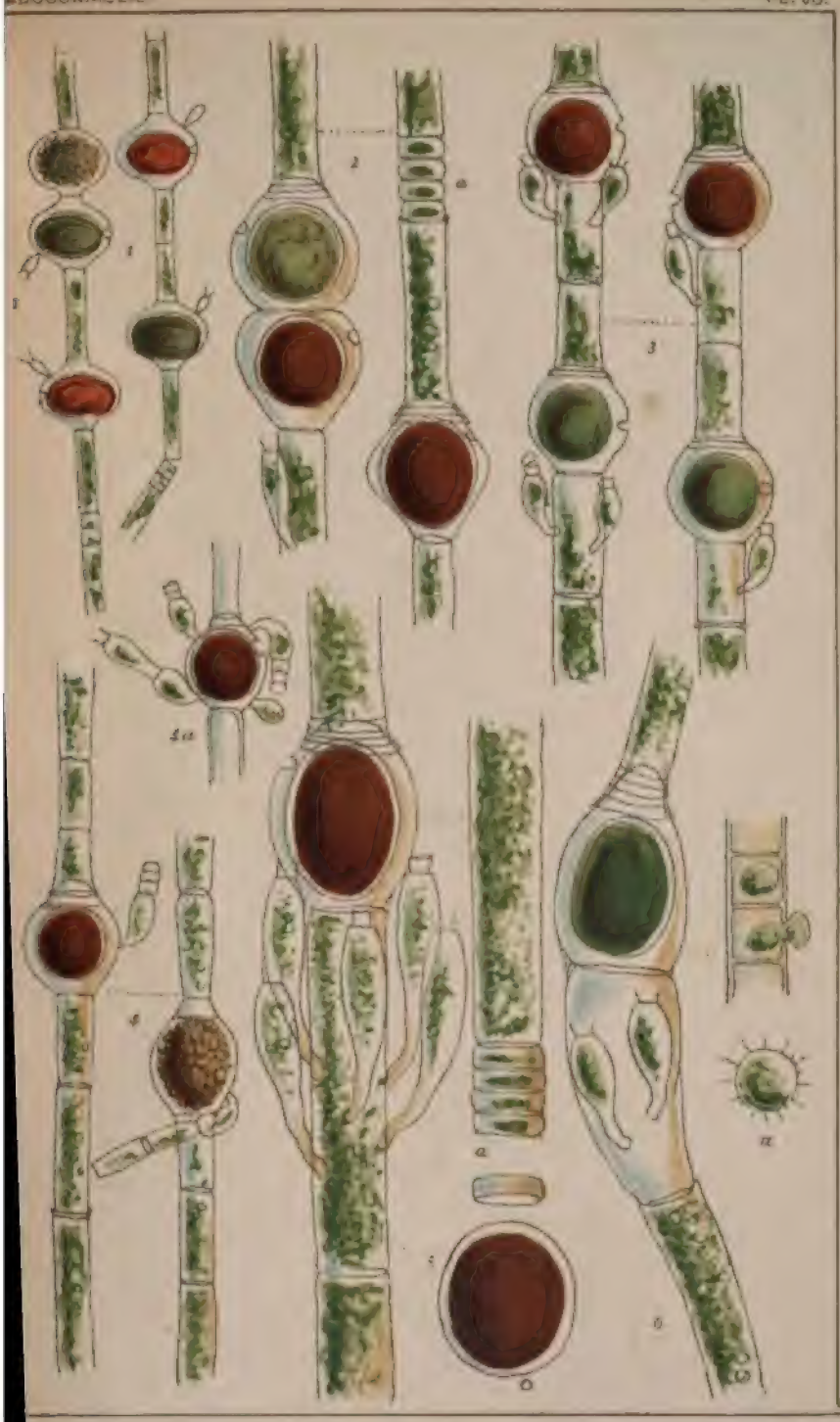
Œdogonium, and Bulbochæte X 450.



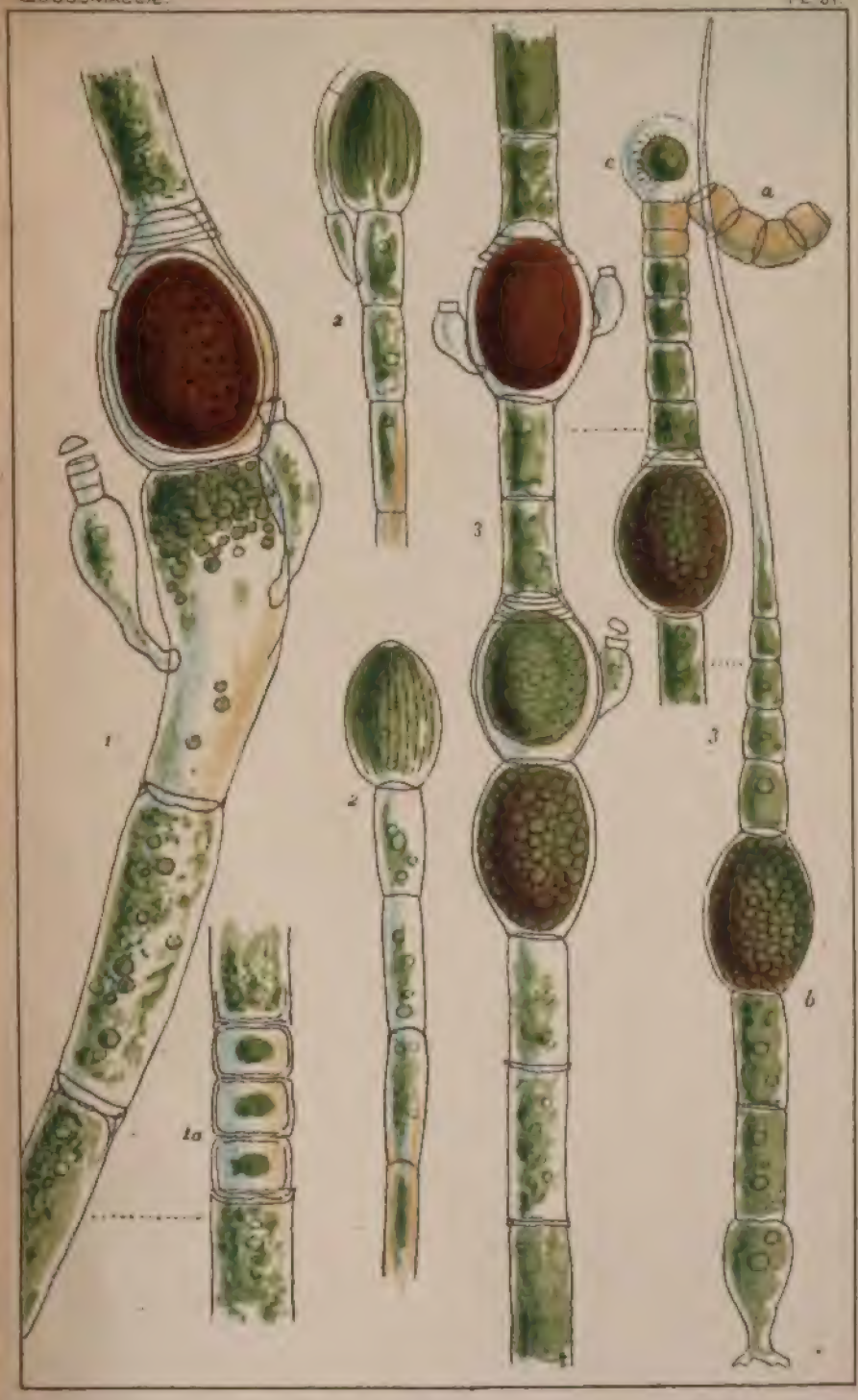
1. Œdogonium Petri W. 2. Œdog. cryptoporum W. 3. Œdog. curvum Pr. 4. Œdog. cymatosporum W. 5. Œdog. minus W. 6. Œdog. versatile Hass. 7. Œdog. crispum Hass. 8. Œdog. Vaucherii Gr.

1. Œdog. urbicum W. 2. Œdog. paludosum Hass. 3. Œdog. Itzigsohnii (D.B.)
4. Œdog. excisum W. 5. Œdog. platygynum W. 6. Œdog. Rothii Pr.
Œdog. Areschougii W. 8. Œdog. pluviale Nord. 9. Œdog. undulatum Br.



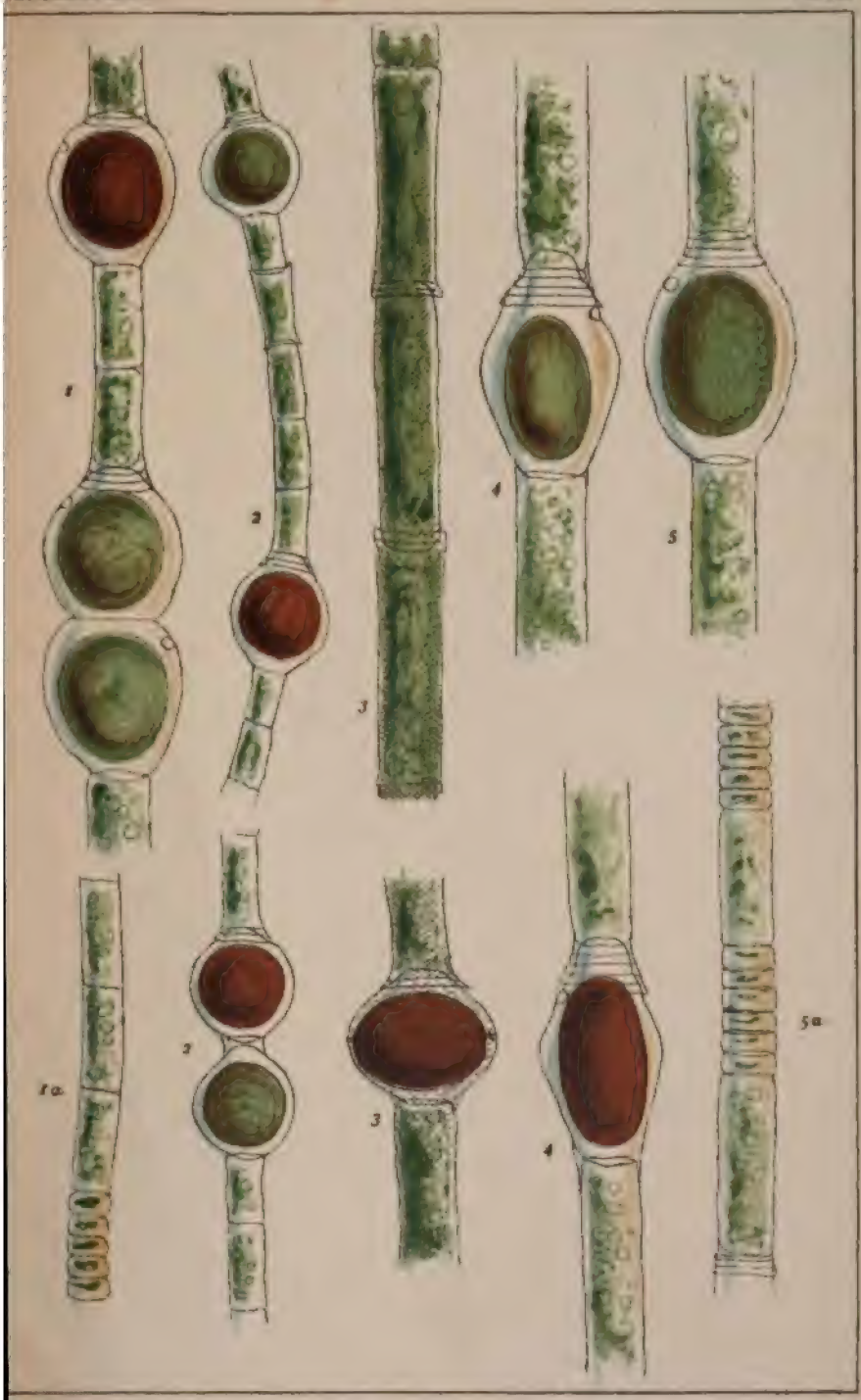


Œdog. depressum Pr. 1. Œdog. flavescens Huss. 3 Œdog. Braunii Kütz. Œdog. macrandrum W. 5. Œdog. crassiusculum W. 6. Œdog. Borzianum

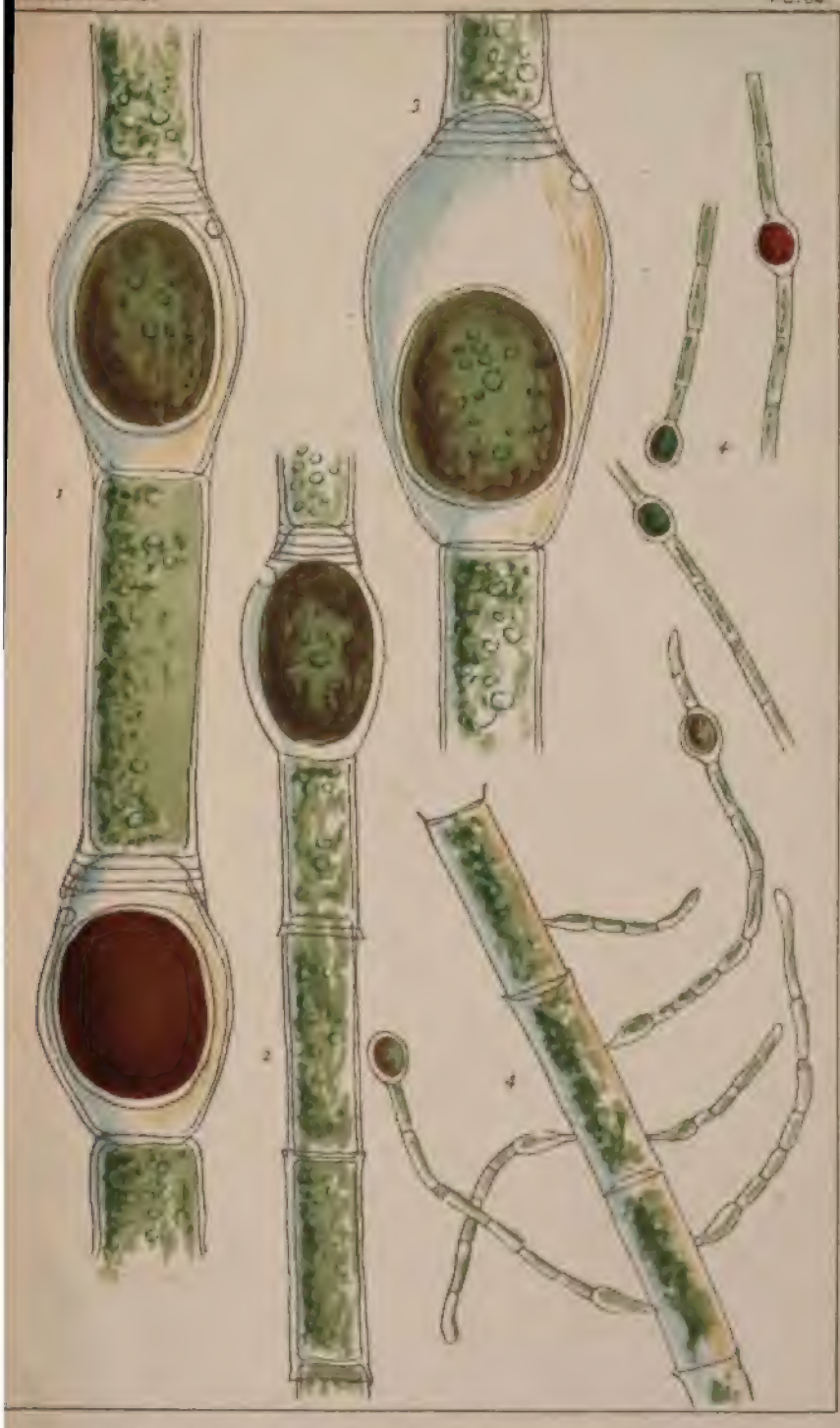


1. Œdog. vaucheriae. Hass. 2 Œdog. aerosporum. D.By. 3 Œdog. ciliatum. (Pr

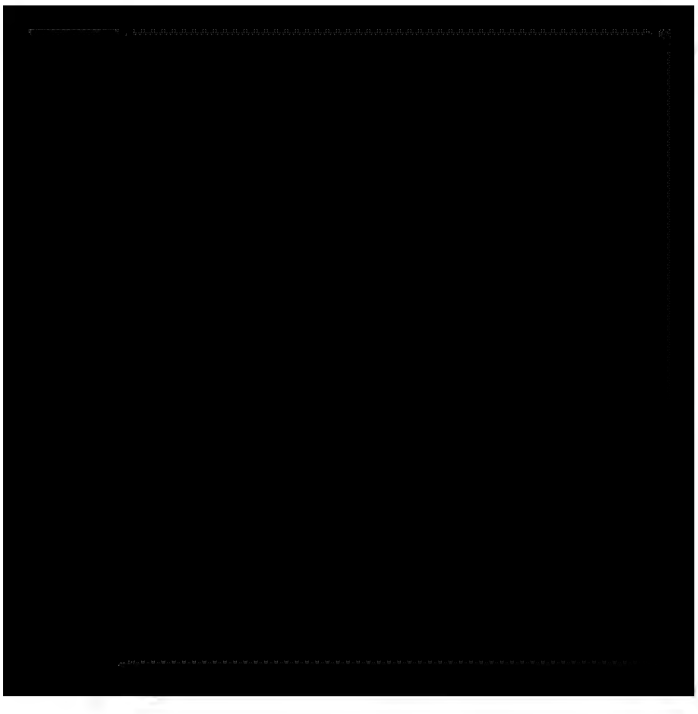
Œdog. Cleveanum W. 2 Œdog. echinospermum, Fr. 3. Œdog. capillare (L.)
4. Œdog. vilaureum W. 5 Œdog. pardinum. Fries.

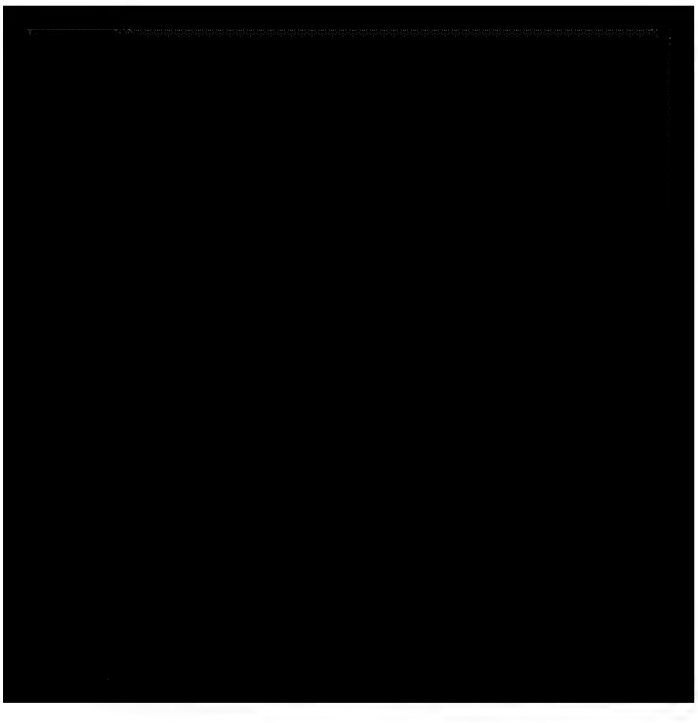


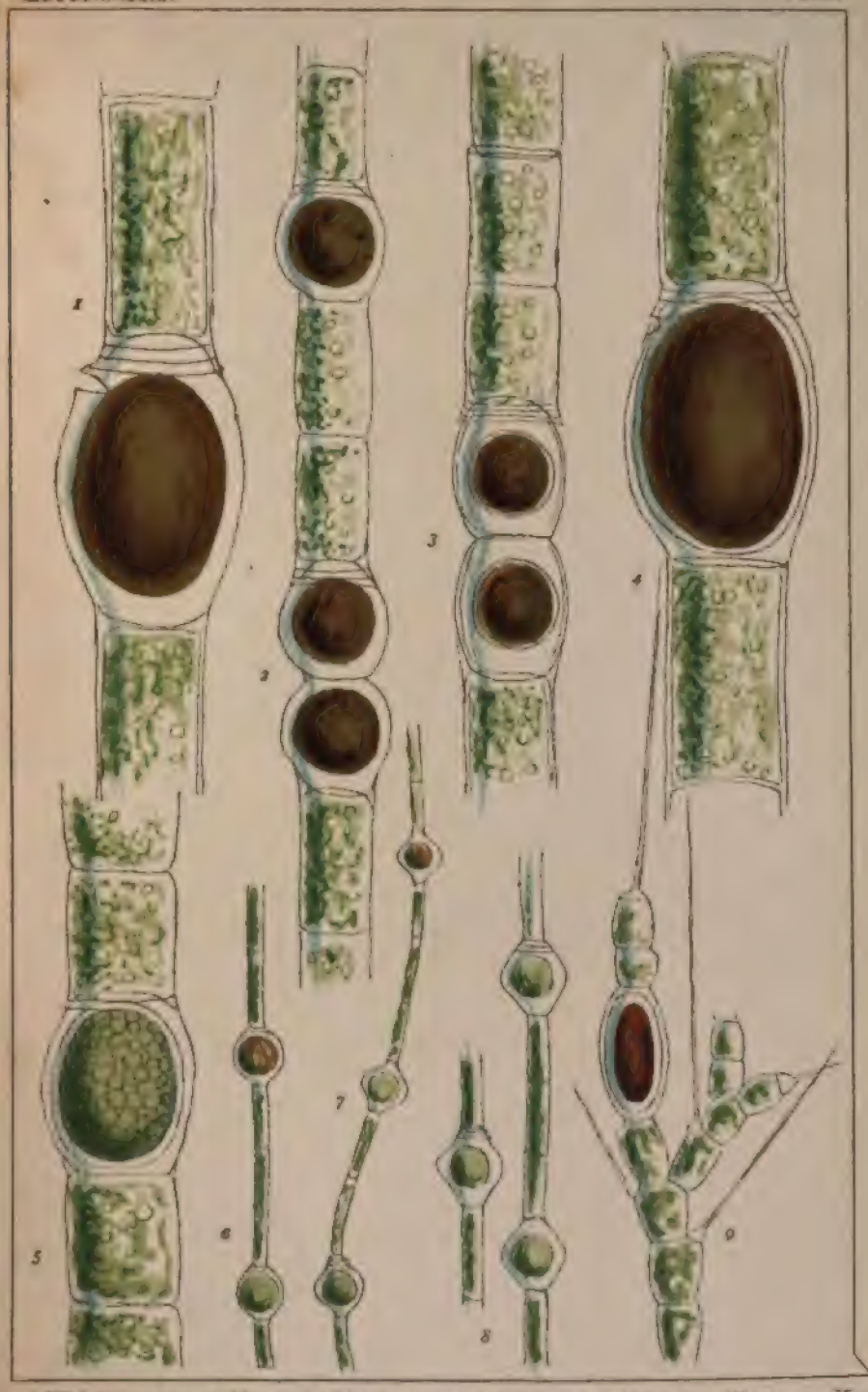
1. Œdog. carbonicum. W. 2. Œdog. Pringsheimii, W. 3. Œdog. punctato-striatum. (DBy. 4. Œdog. Boscii, W. 5. Œdog. tumidulum. Kütz.



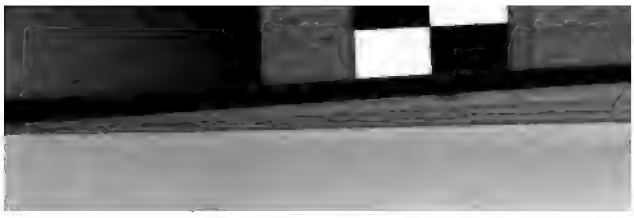
1. Œdog. Landsboroughii Hass. 2. variety gemelliparum. Pr.
3. Œdog. rivulare. Pr. 4. Œdog. longatum. Kütz.

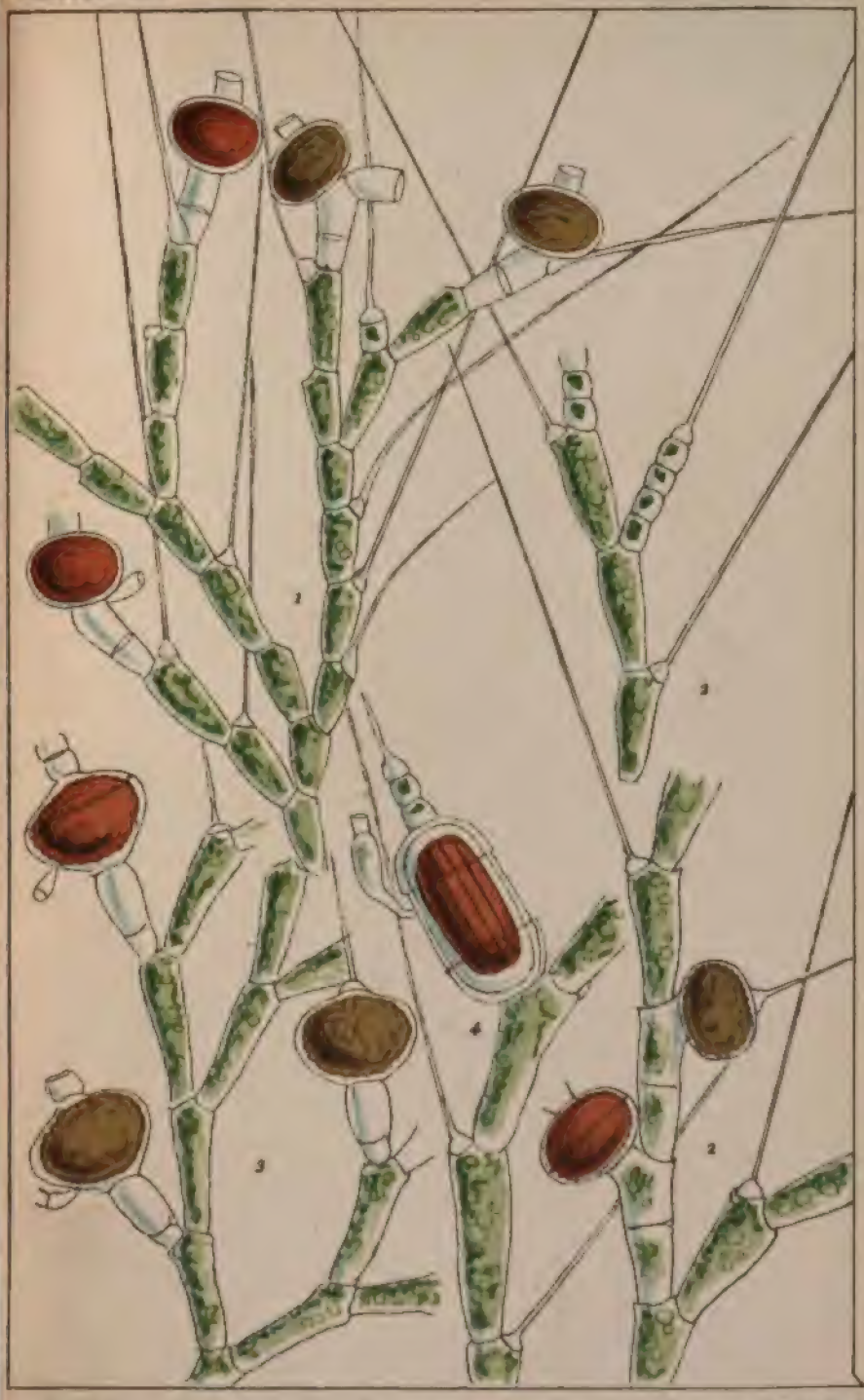




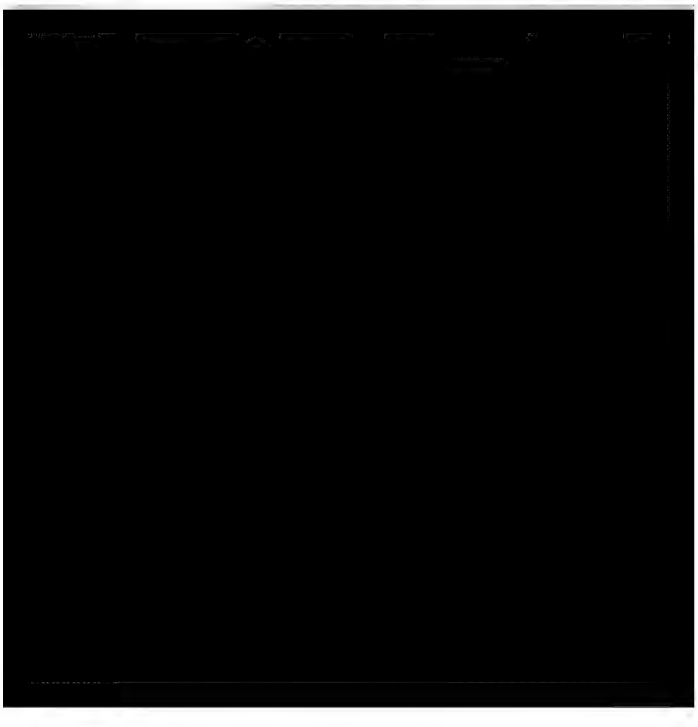


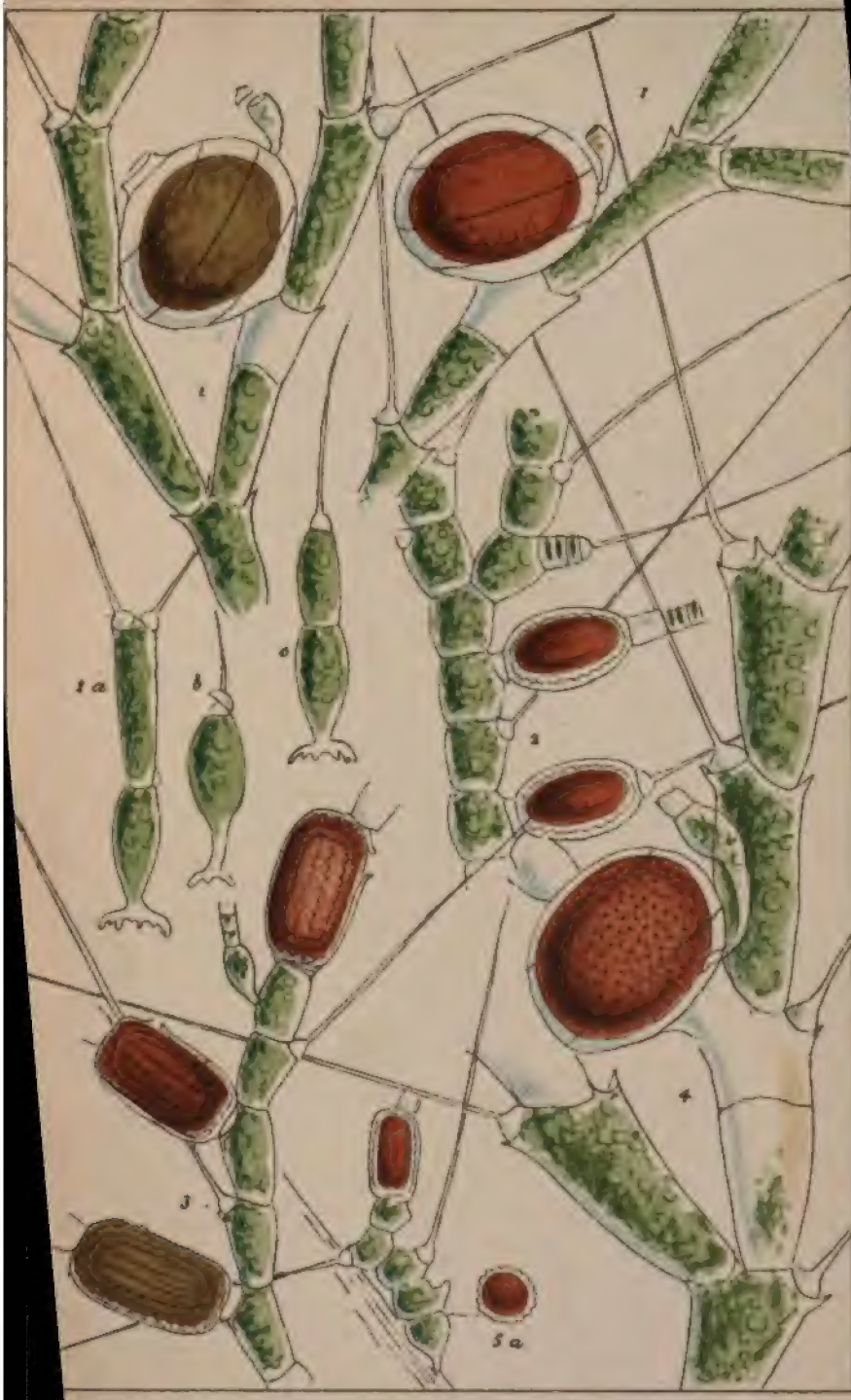
1. Œdog. crassum Hass. 2. Œdog. fasciatum. K. 3. Œdog. capillaceum K.
4. Œdog. grande K. 5. Œdog. subcetaceum. K. 6. Œdog. tenellum. K.
7. Œdog. delicatulum K. 8. Œdog. hexagonum. K. 9. Bulbochaete gracilis.





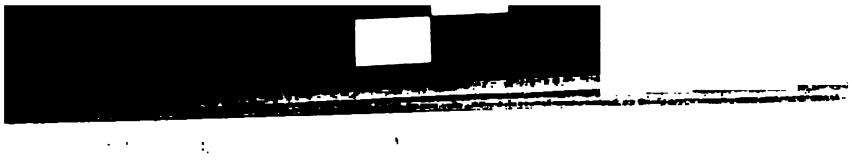
1. *Bulbochæte intermedia.* DBy. 2. *Bulbochæte polyandra.* Cleve. 3. *Bulbochæte Brebissonii.* Kutz. 4. *Bulbochæte insignis.* Pr.

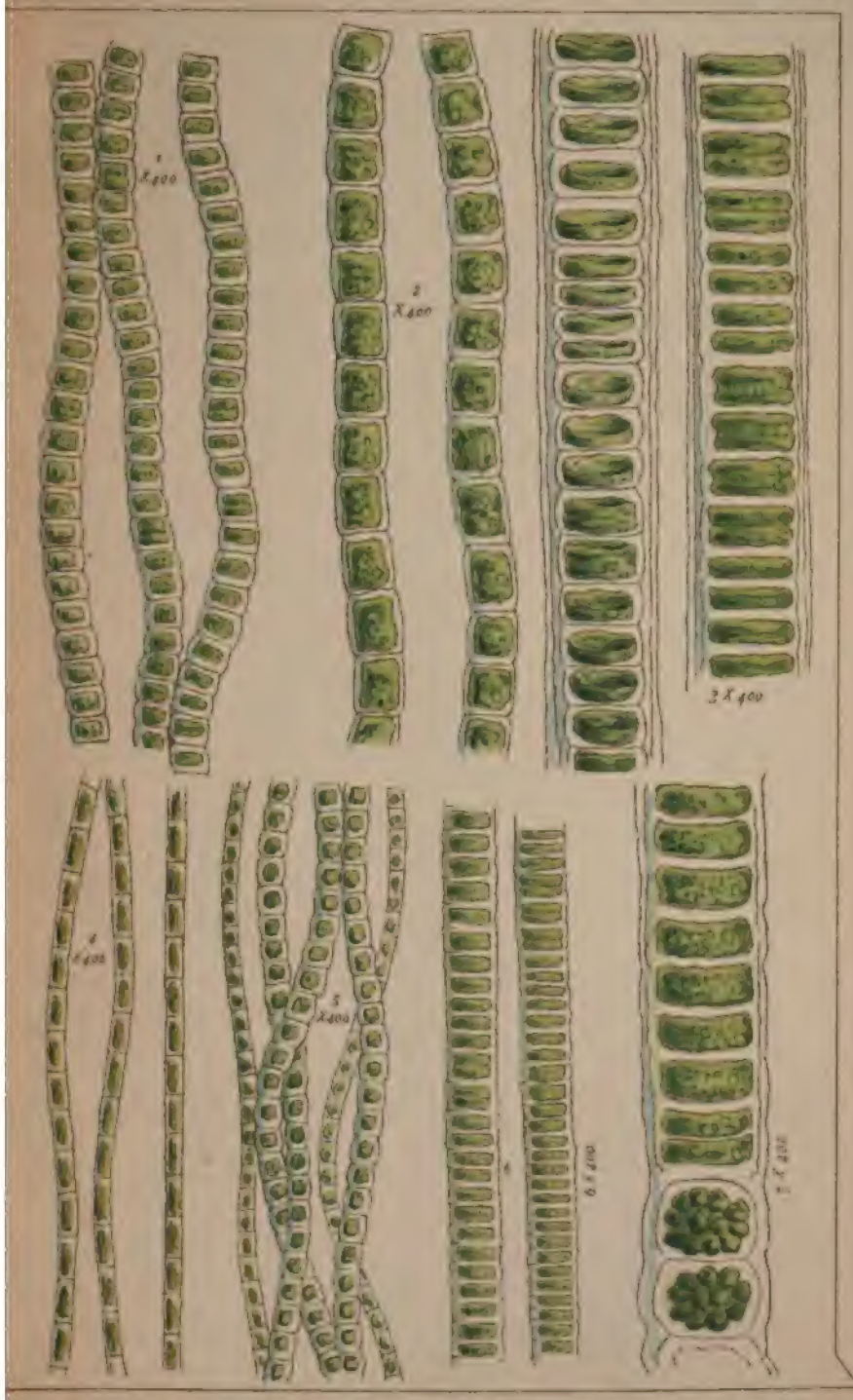




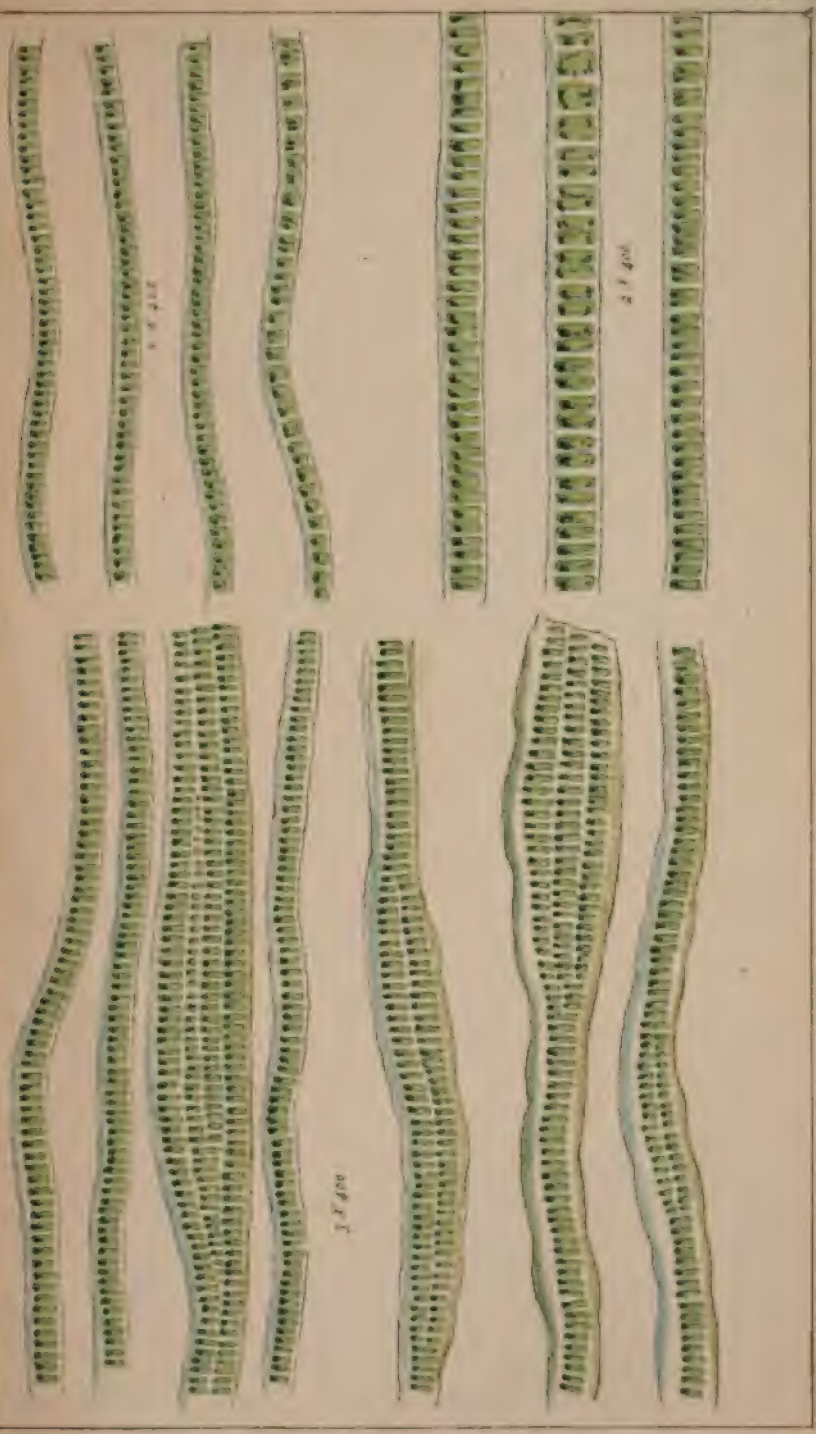
...chæte setigera Ag. 2 Bulbochæte mirabilis W. 3. Bulbochæte rectangularis.
4. Bulbochæte gigantea Pr. 5. Bulbochæte pygmæa Pr.

Hormidia zonata (W. & M.) × 400.

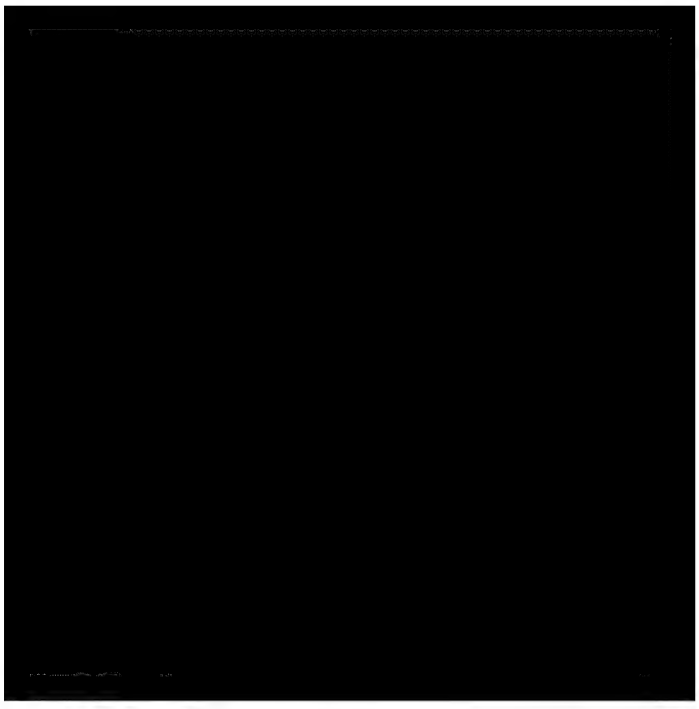


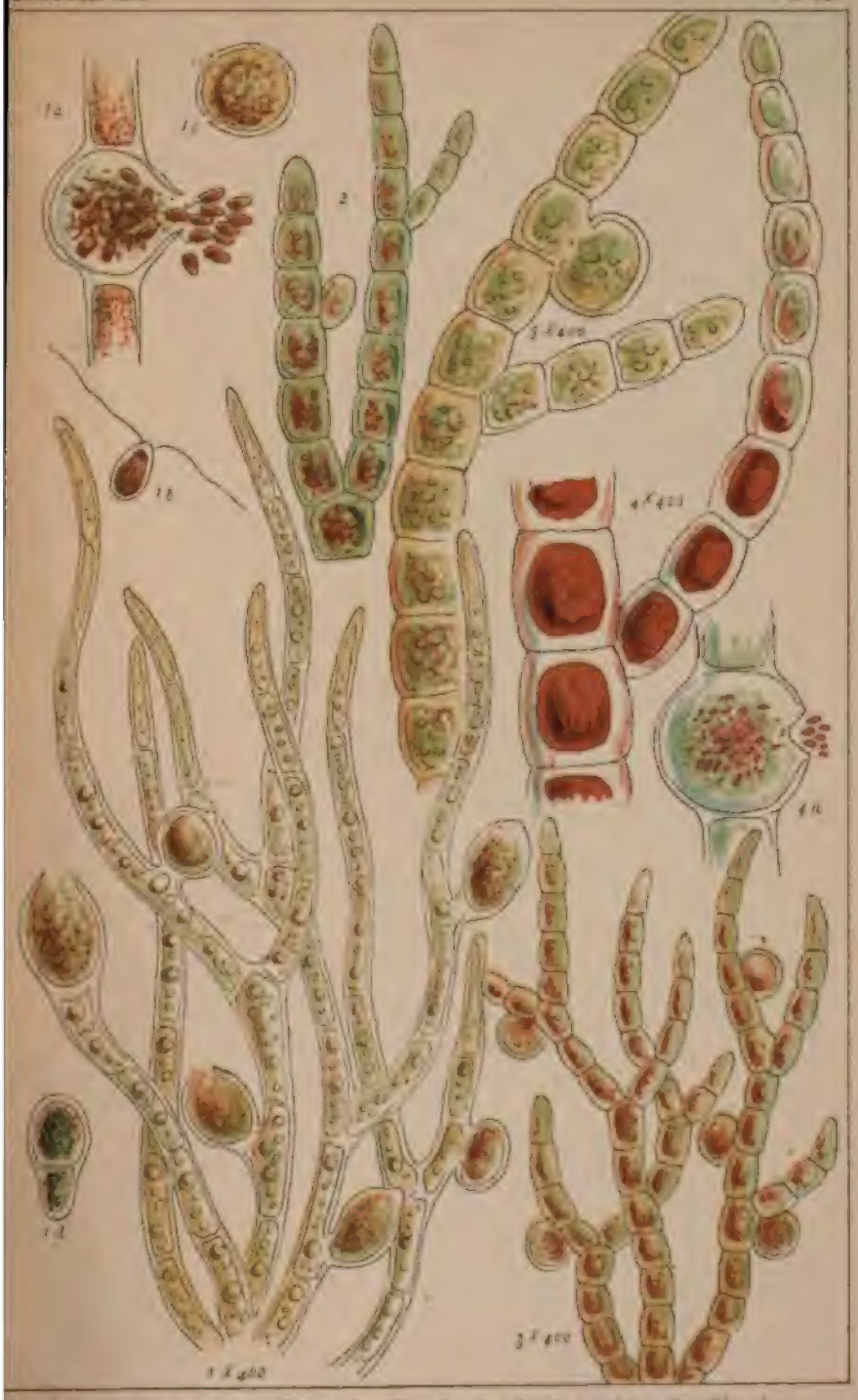


1. *Hormiscia moniliformis*, Kutz. 2. *Hormiscia cutæniformis*, Kutz.
3. *Hormiscia sporonia* (form.) 4. *Ulothrix variabilis*, Kutz.



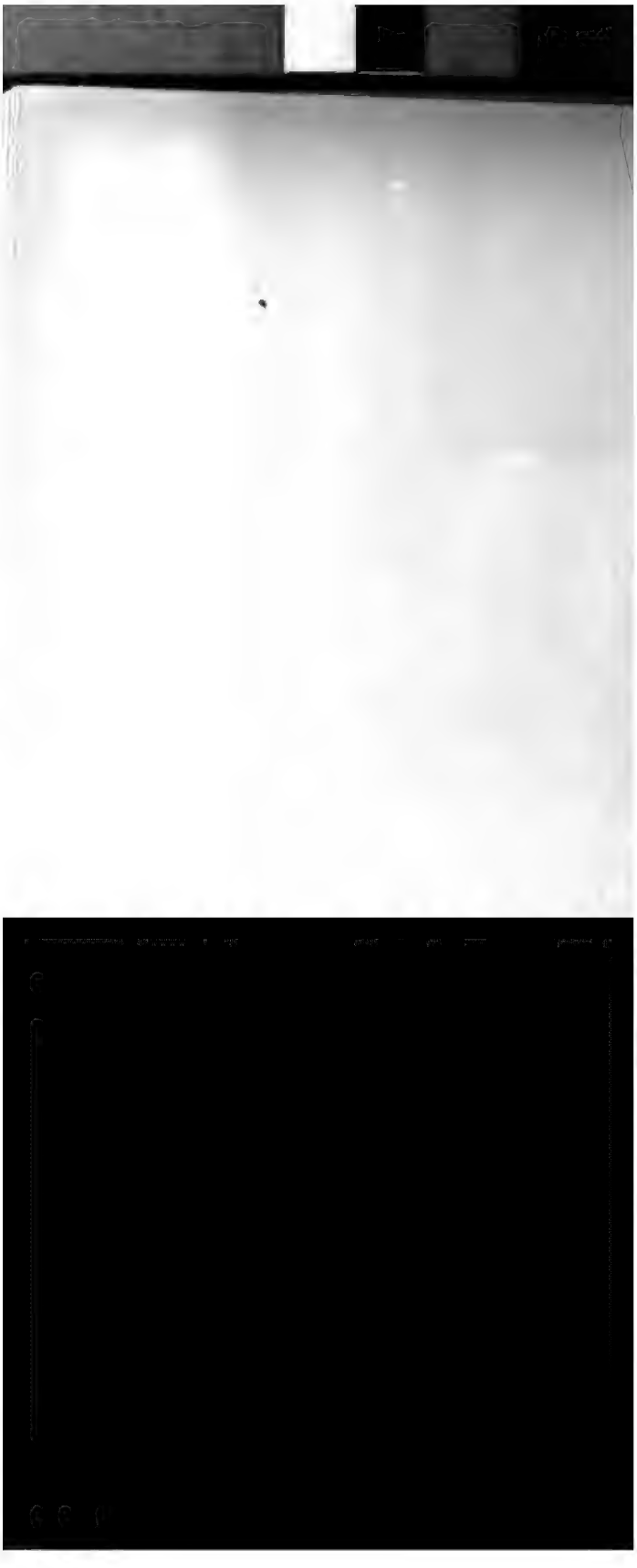
1. *Ulothrix radicans. Kutz.* 2. *Ulothrix parietina. Kutz.*
3. *Schizogonium murale. Kutz.*

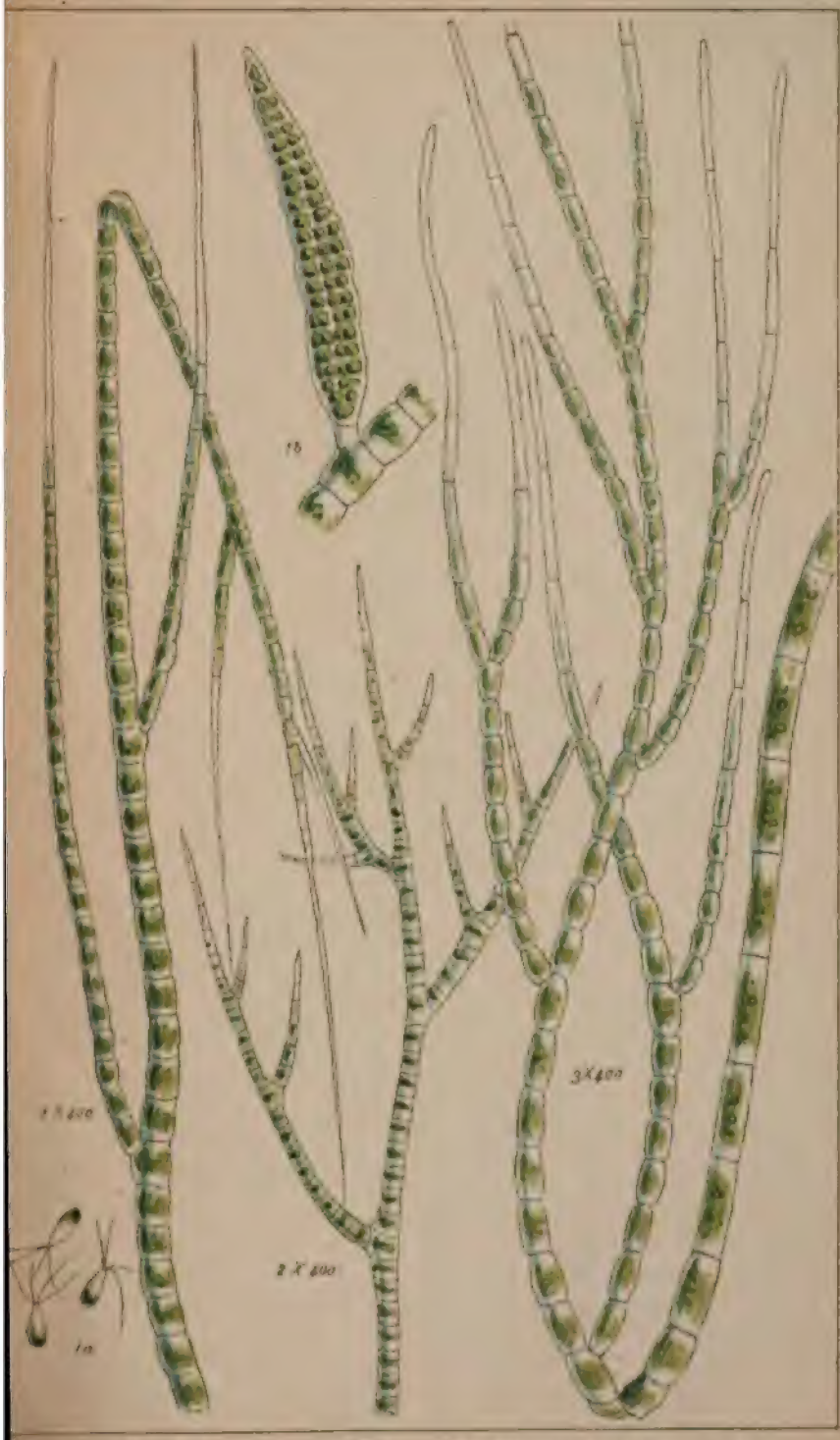




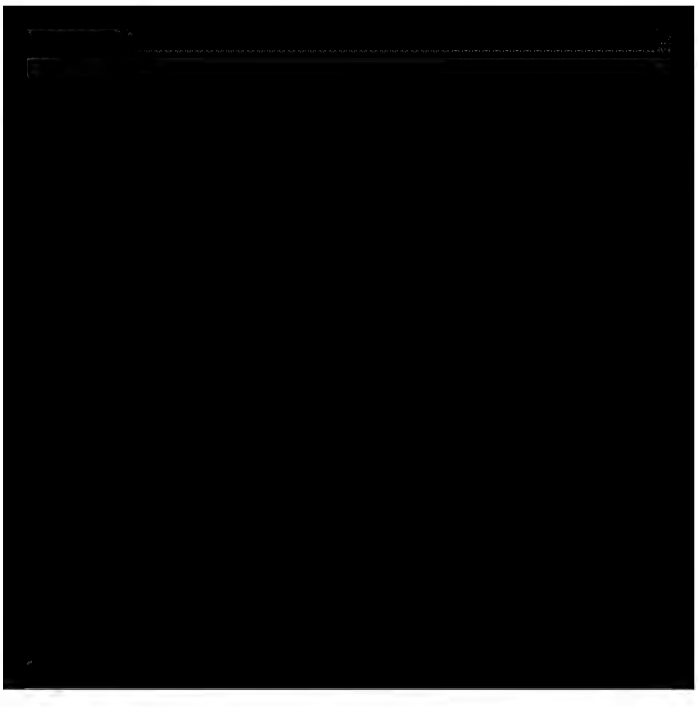
1. Chroolepus aureum. Linn. 2. Chroolepus odoratum. Ag. 3. Chroolepus abietinum var. lichenicolum. 4. Chroolepus iolithus. Linn. 5. Chroolepus ilvicolum. H.

1. *Microthamnion vexator*. Cooke. 2 *Stigeoclonium thermale*. Br.
3 *Stigeoclonium tenue*. Ag.



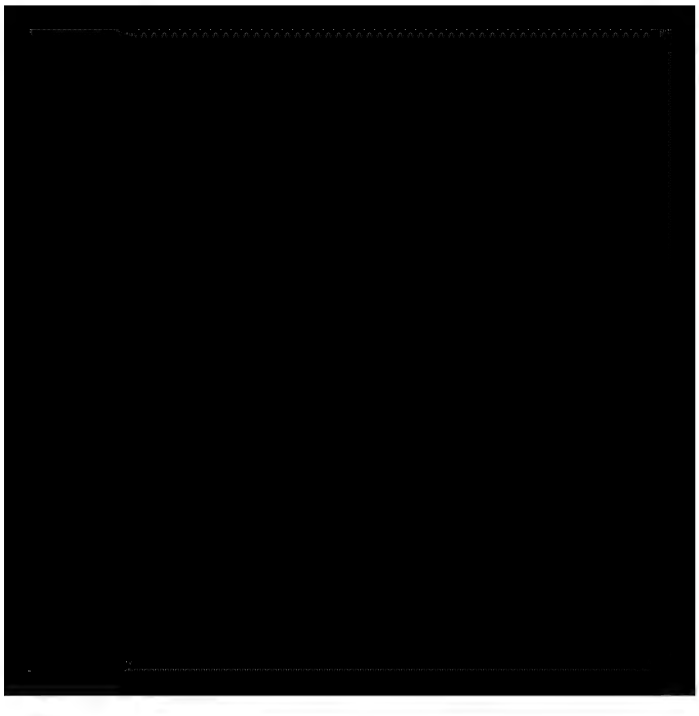


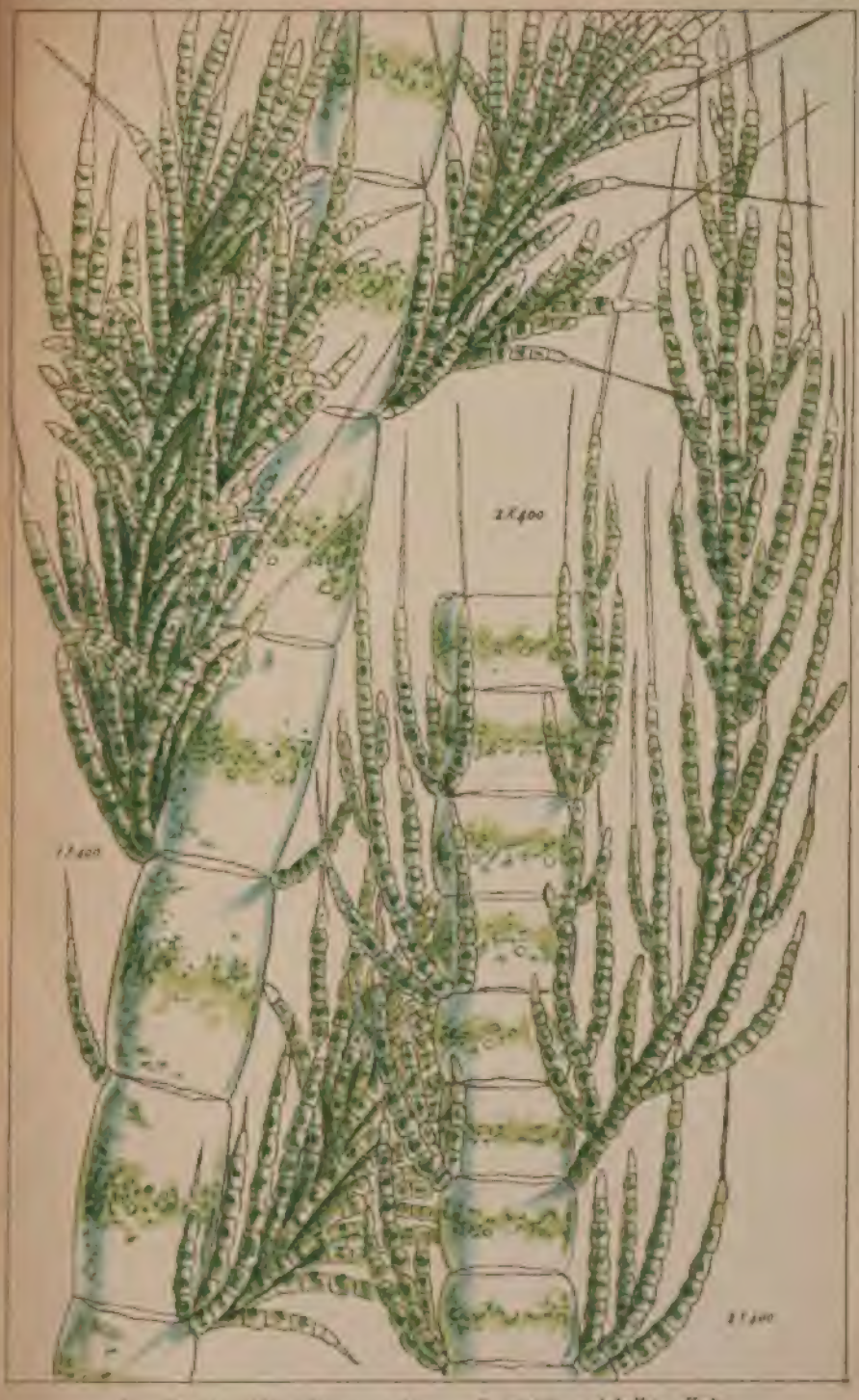
1. *Stigeoclonium protensum. Kutz.* 2. *Stigeoclonium nanum Kutz.*
3. *Stigeoclonium fastigiatum. Kutz.*



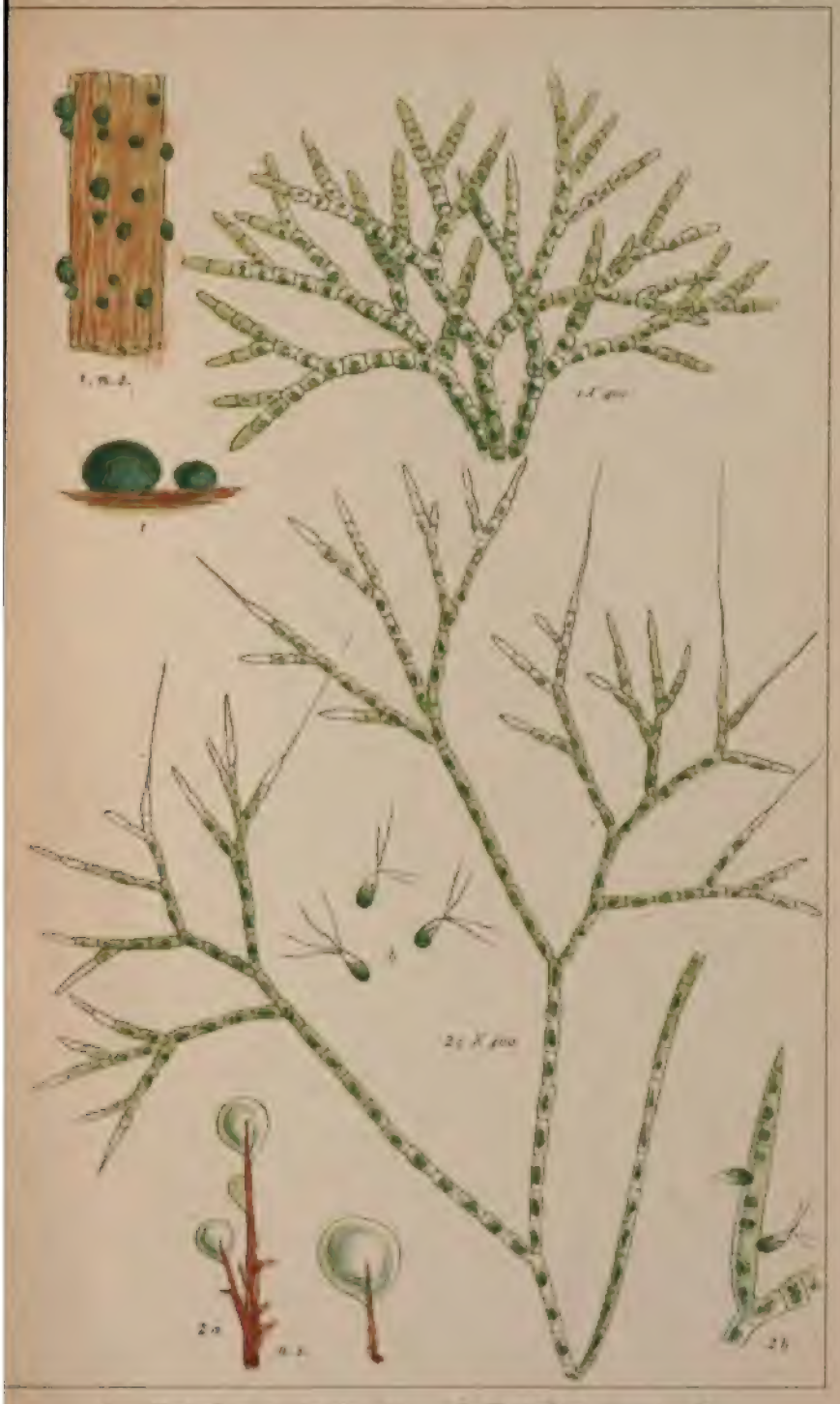
[redacted]

1. *Draparnaldia glomerata Ag.* 2 *variety distans, Kutz.*



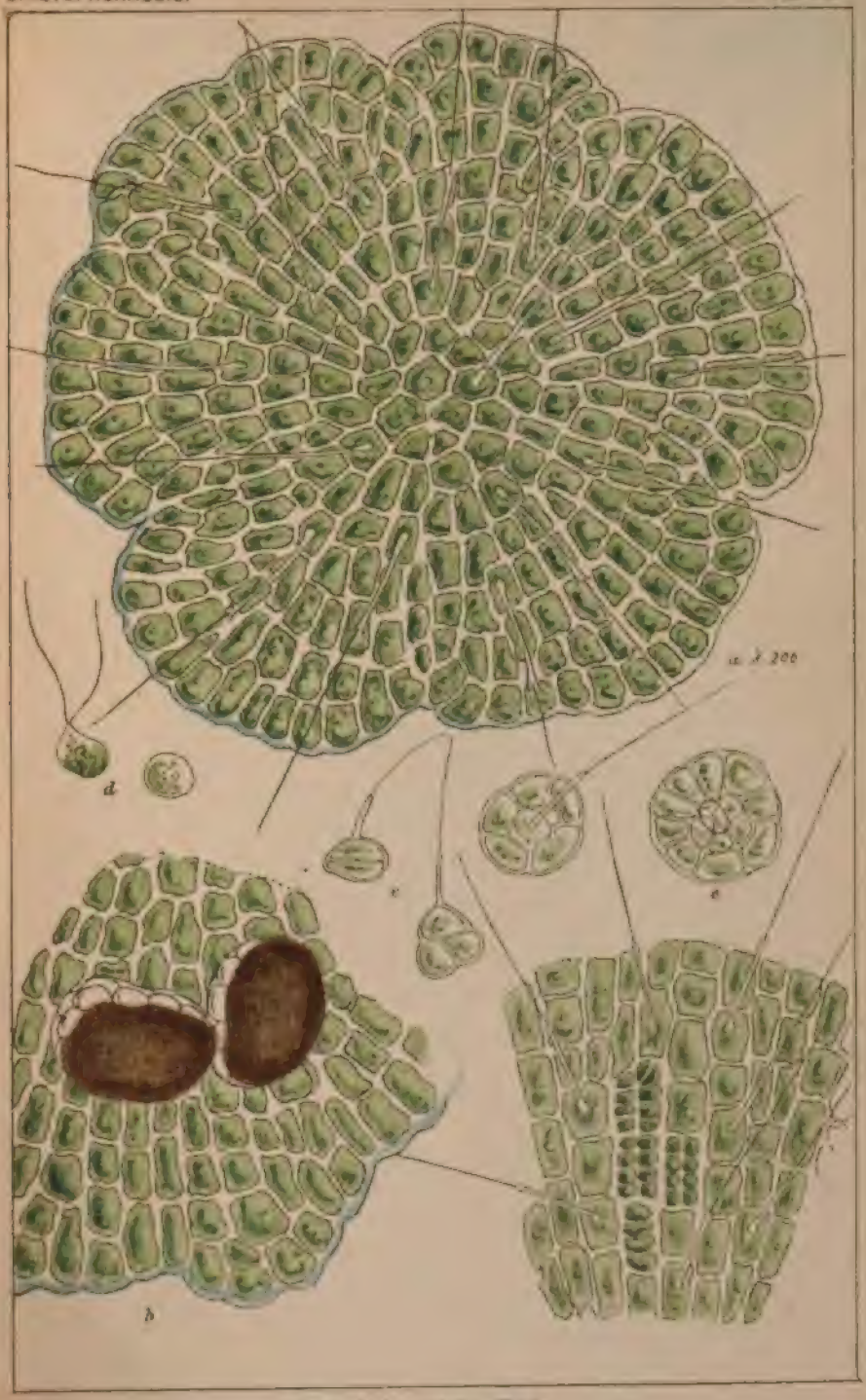


1. Draparnaldia plumosa. Ag. 2 variety pulchella. Kutz.



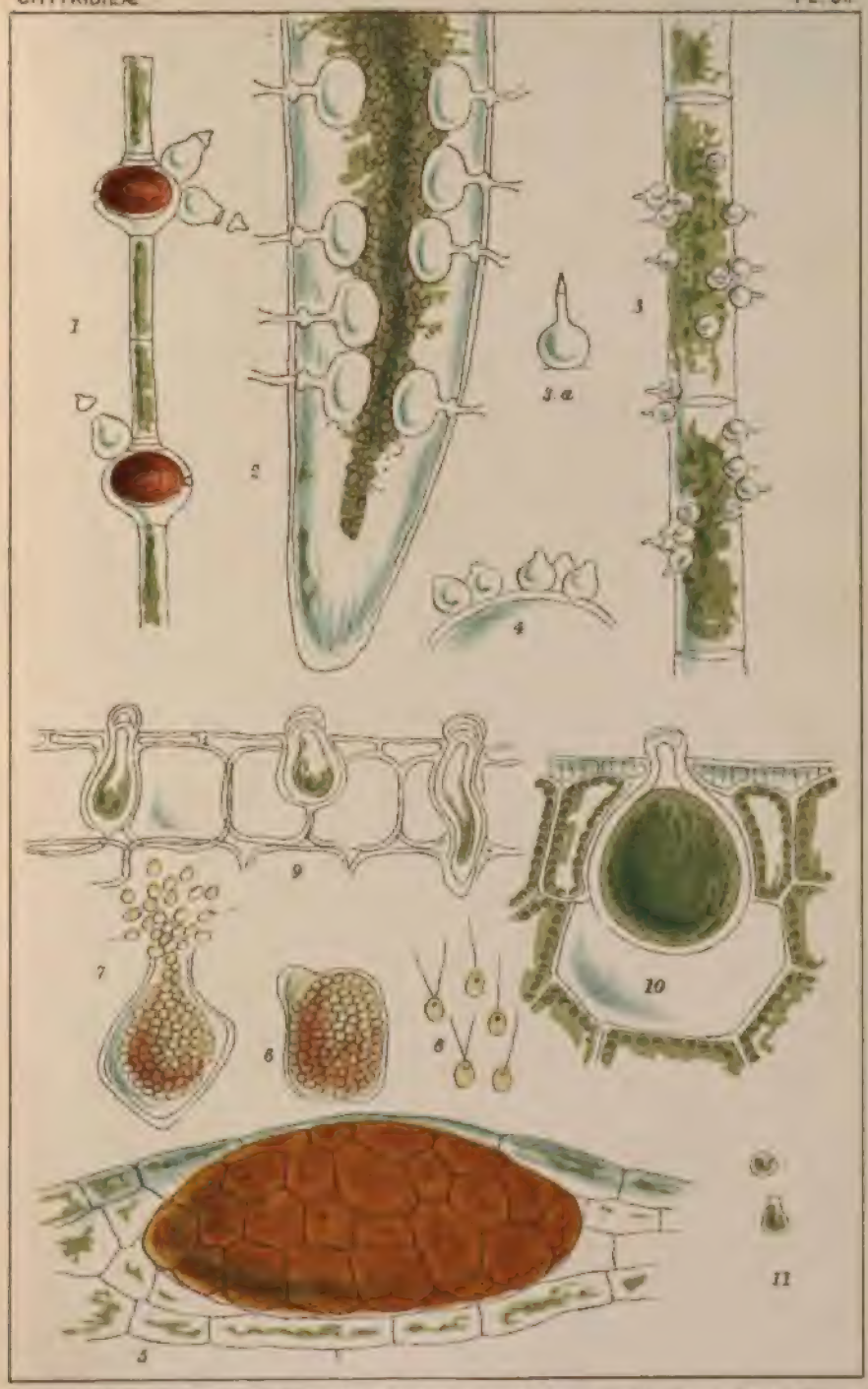
1. *Chætophora pisiformis. Ag.* 2 *Chætophora elegans. Ag.*

1. *Chætophora tuberculosa* Ag. 2. Chætophora endiæfolia Ag.



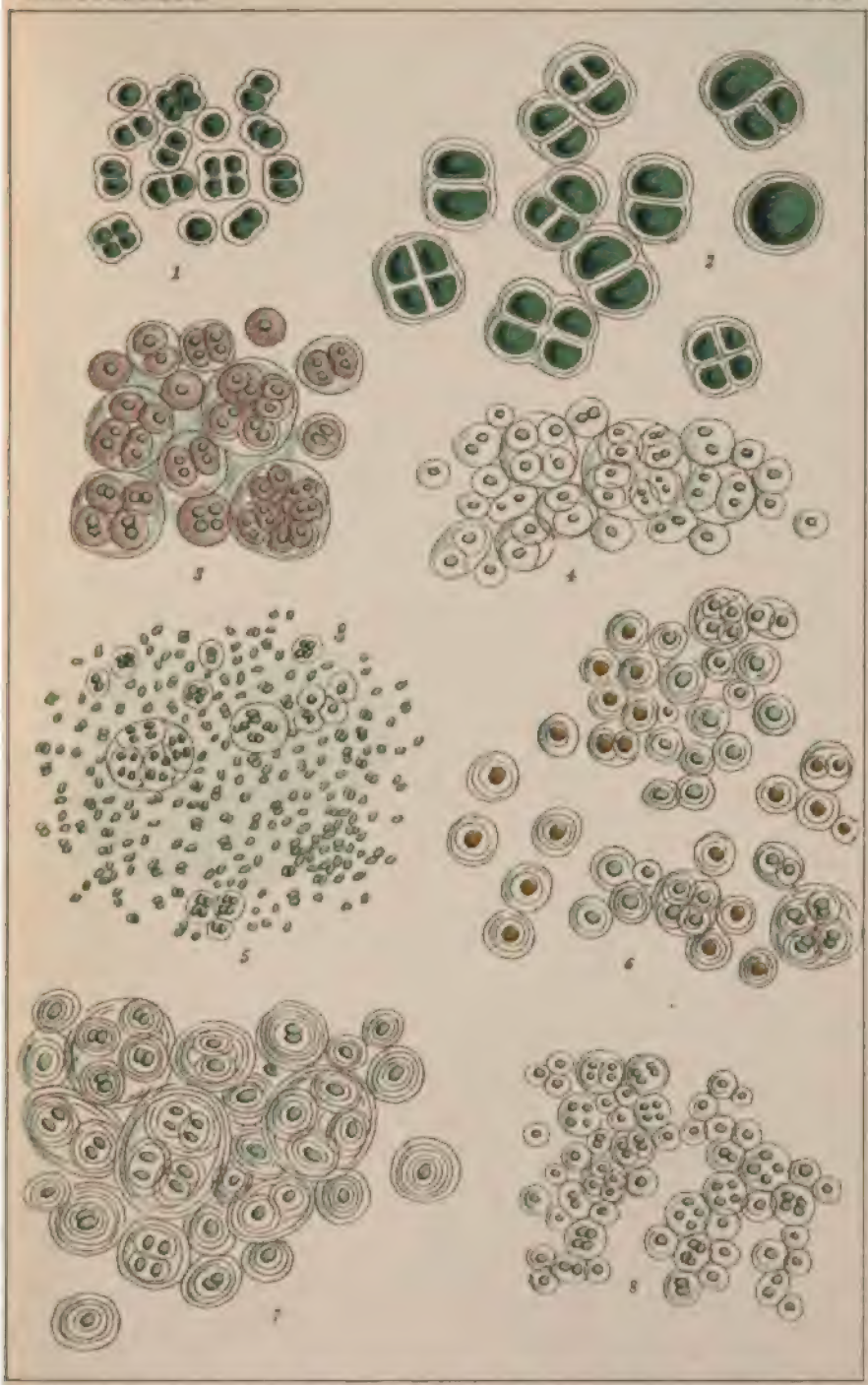
Coleochæte scutata. Bréb.

1. *Coleochæte orbicularis. Prings.* 2. *Aphanochæte hystrix. Thur.*
3. *Aphanochæte repens. Br.*

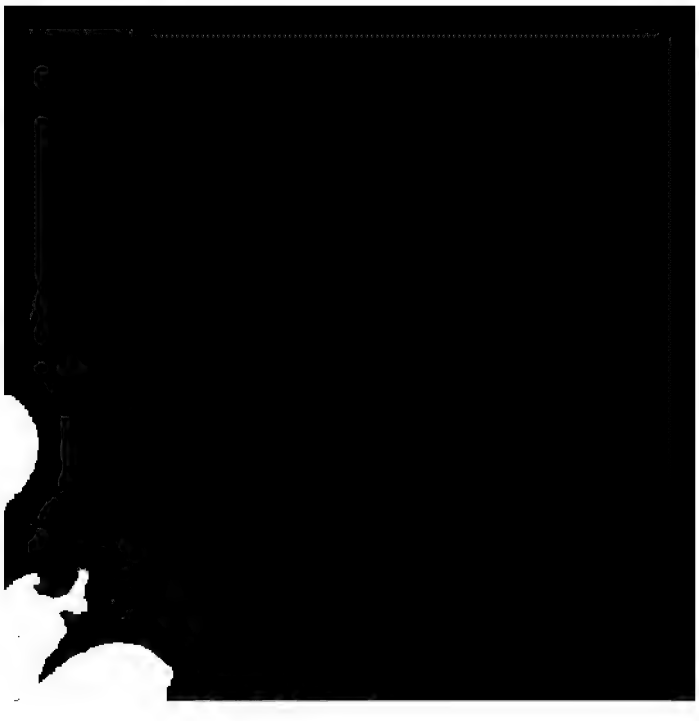


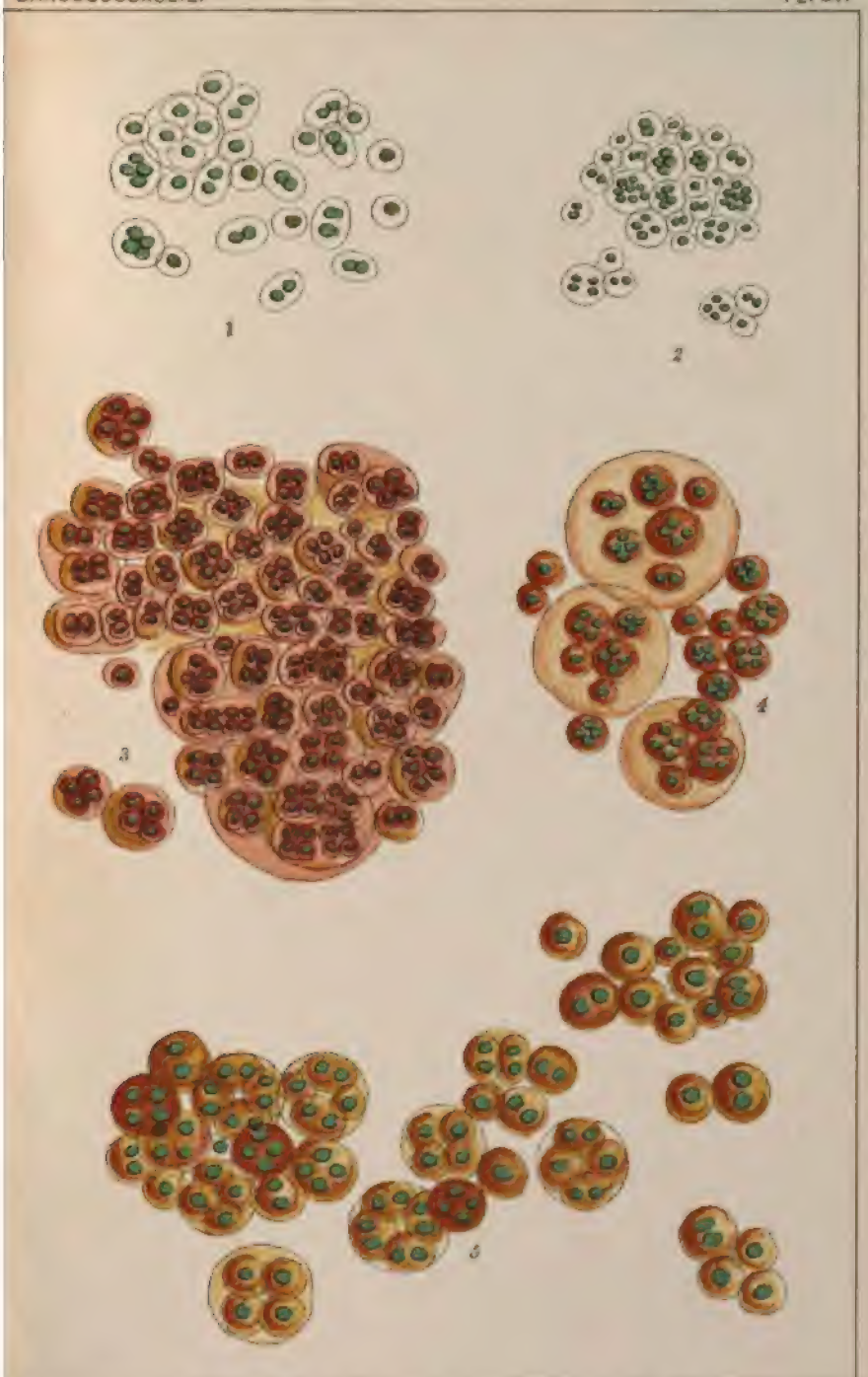
1. *Chytridium acuminatum.* 2. *Olpidium endogenum.* 3. *O. ampullaceum.* 4. allied species.
5-8. *Synchitrium Taraxaci.* 9-11. Chlorochytrium Lemnæ.

1-6. Synchitrium Mercurialis. Fckl. 7-9. Synchitrium Anemones. Wor.

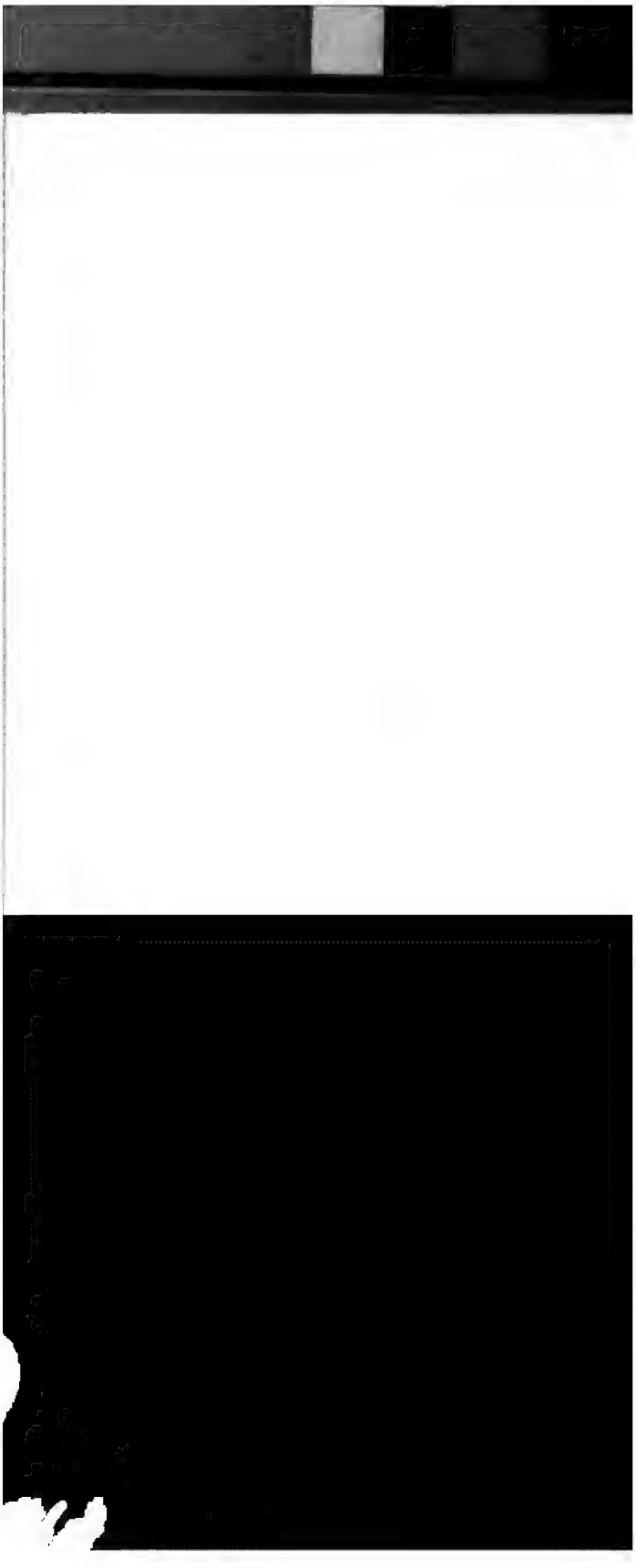


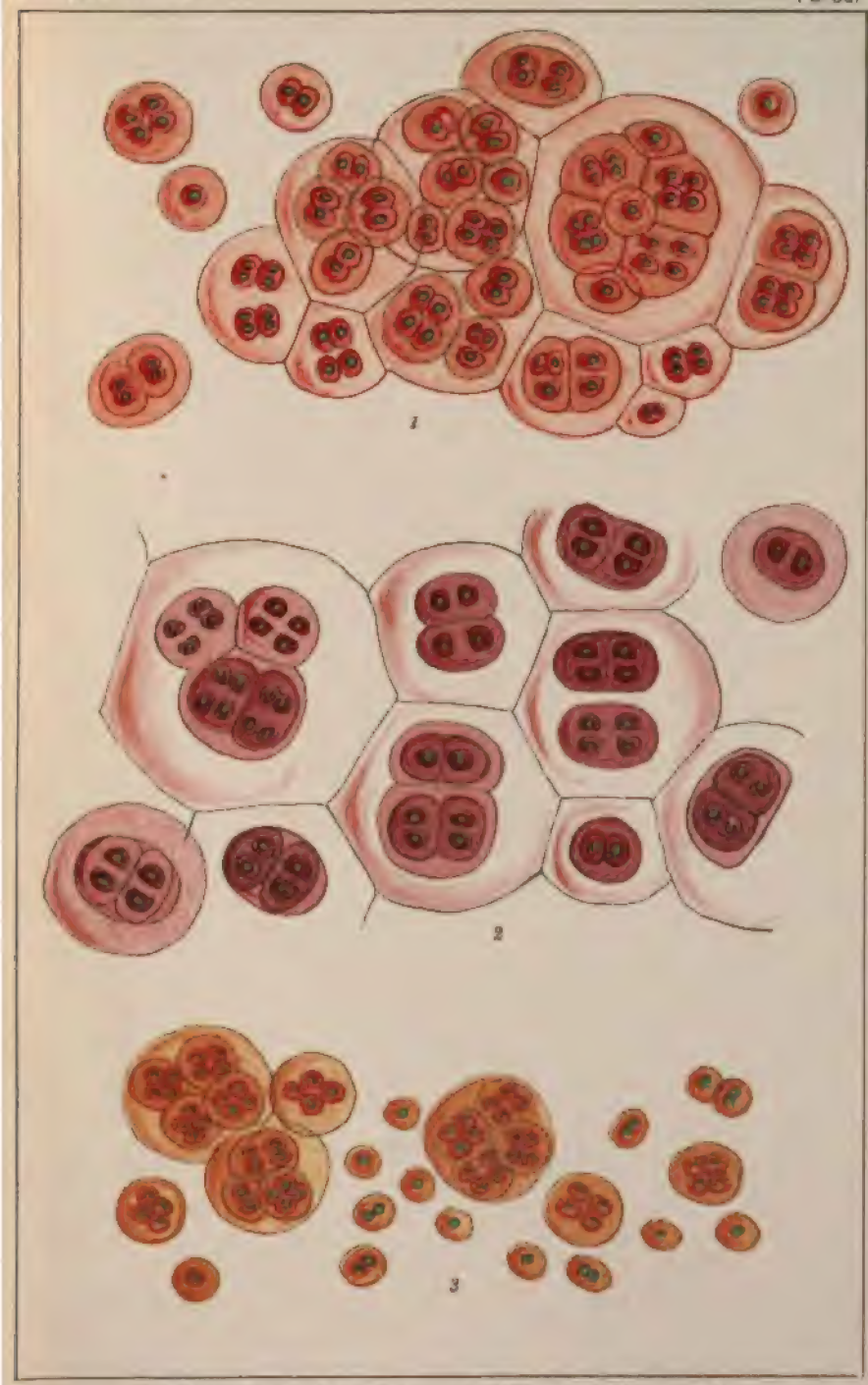
1. Chroococcus coherens. Nag. 2. Chroococcus turgidus. Nag. 3. Gloeocapsa coracina. Kutz. 4. Gloeocapsa atrata. Rabh. 5. Gloeocapsa livida. Kutz. 6. Gloeocapsa caldariorum. Rabh. 7. Gloeocapsa polydermatica. Kutz. 8. Gloeocapsa quaternata. Breb.



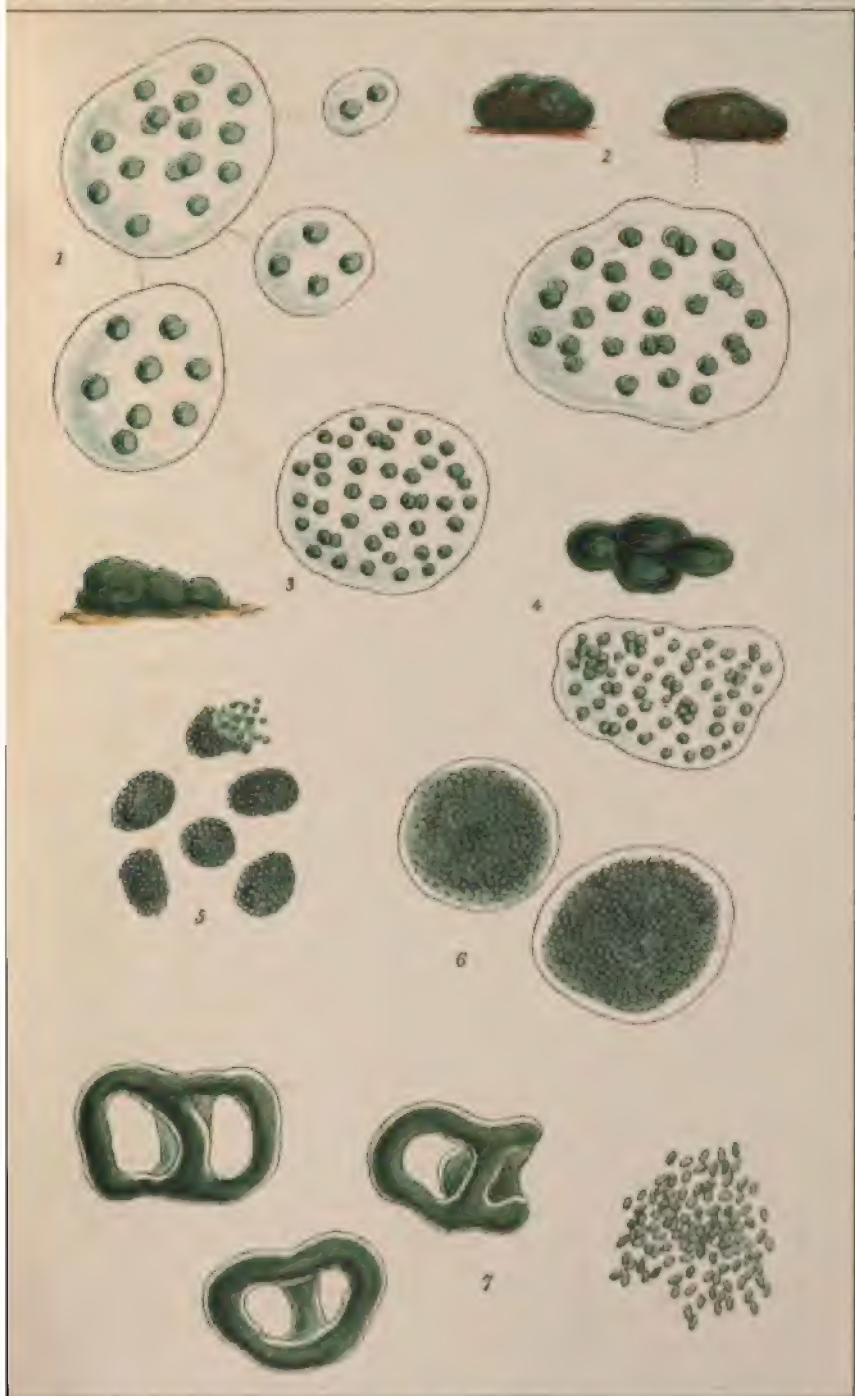


1. *Gloeocapsa arenaria*. Rabh. 2. *Gloeocapsa crepidinis*. Kütz. 3. *Gloeocapsa Magma*. Kütz.
4. *Gloeocapsa rupicola*. Kütz. 5. *Gloeocapsa rupestris*. Kütz.

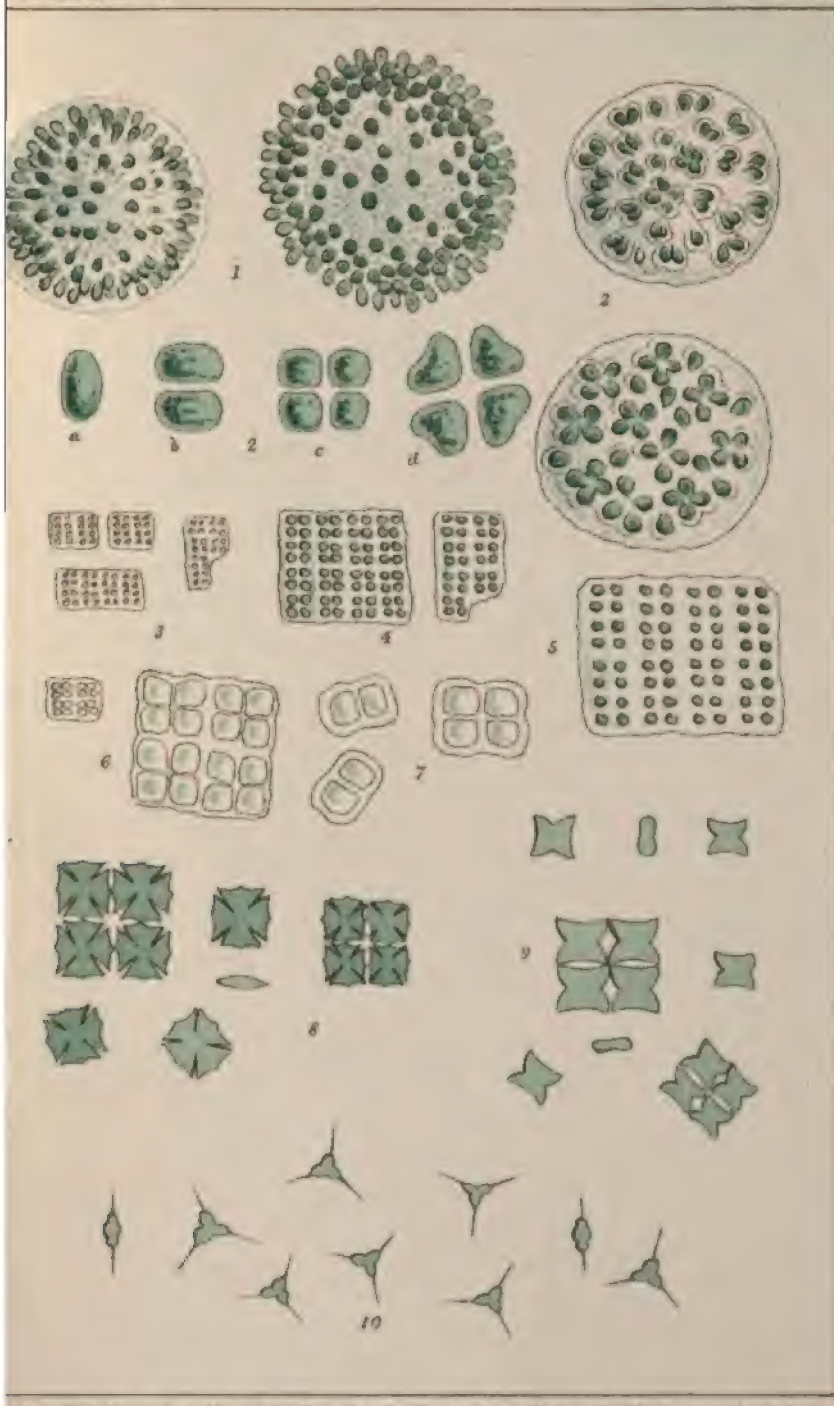




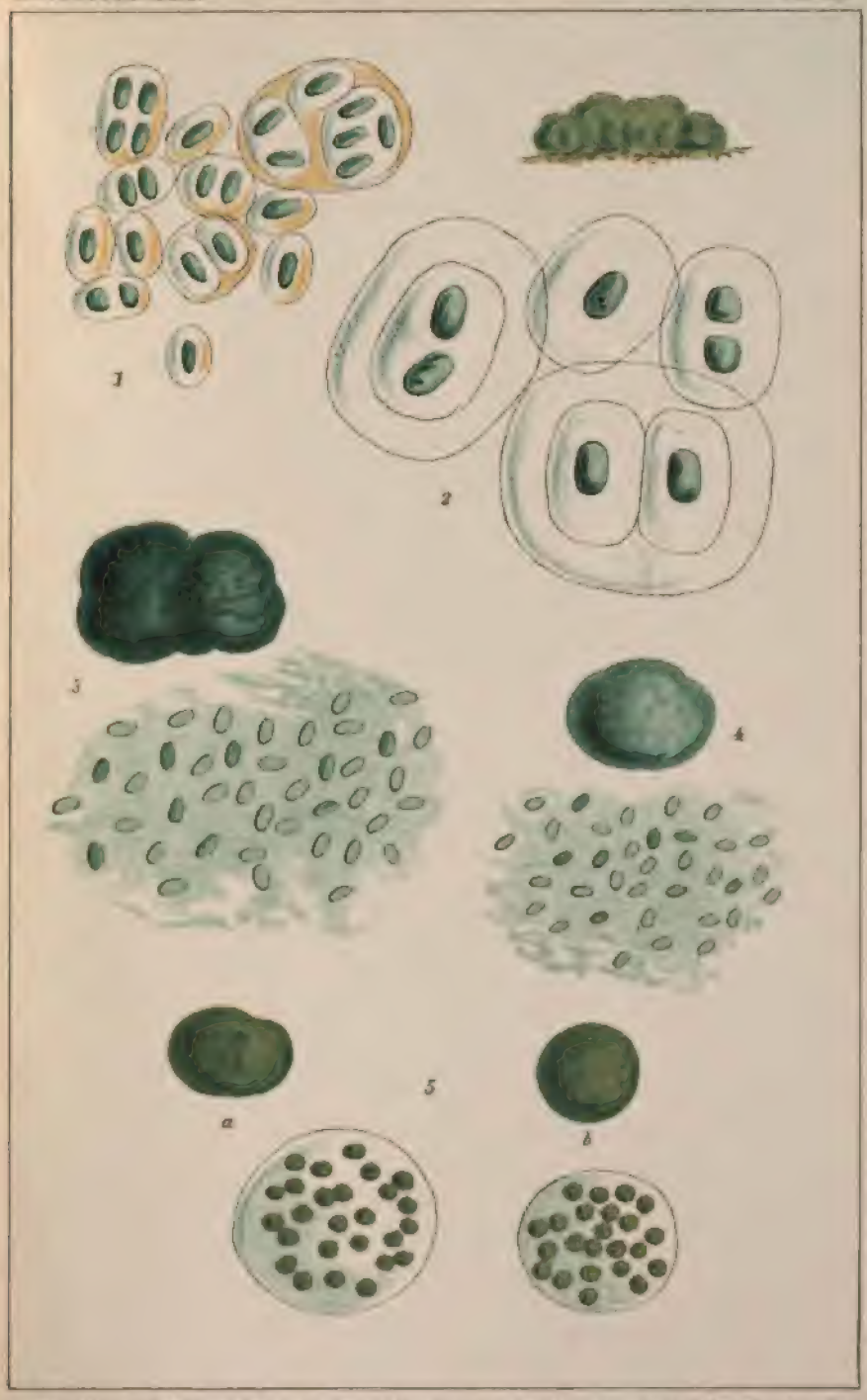
1. Gloeocapsa sanguinea. Kutz. 2. Gloeocapsa Ralfsiana. Kutz.
3. Gloeocapsa Shuttleworthiana. Kutz.



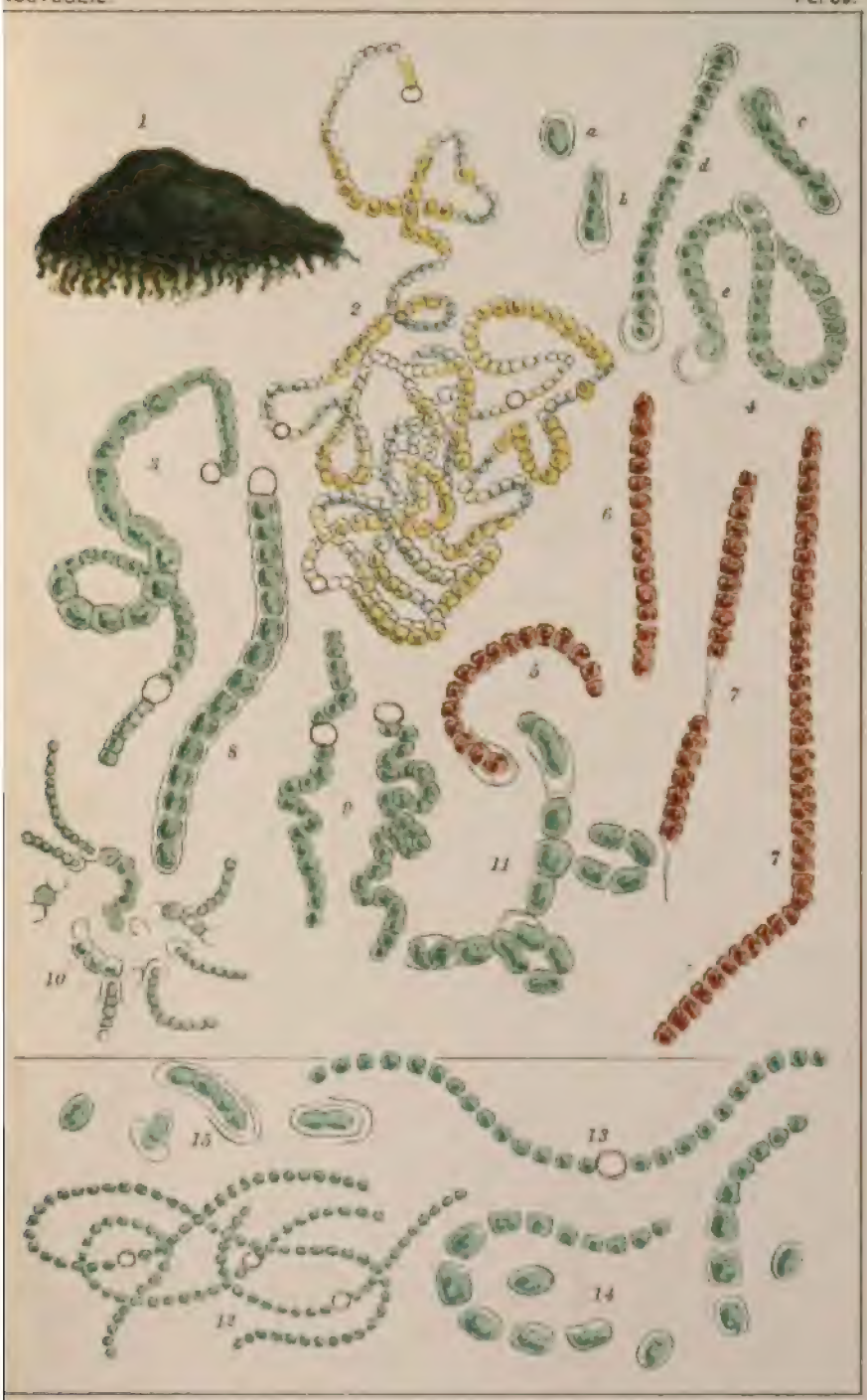
hanocapsa virescens. Rabh. 2. *Aphanocapsa rivularis. Rabh.* 3. *Aphanocapsa Grevillei. Rabh.*
hanocapsa depressa. Rabh. 5. *Microcystis protogenita. Rabh.* 6. *Microcystis marginata. Men.*
7. *Clathrocystis æruginosa. Henfr.*



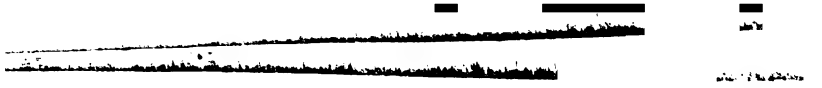
rium Kützingianum. Nag. 2. *Gomphosphæria aponina. Kütz.* 3. *Merismopedia violacea. Kütz.*
pedia glauca. Nag. 5. *M. punctata. Meg.* 6. *Merismopedia ventriculi. Rob.* 7. *M. venis. Rabh.*
tetrapedia Crux-Michaeli. R. 9. *Tetrapedia Reinschiana. Ar.* 10. *Tetrapedia setigera. Ar.*

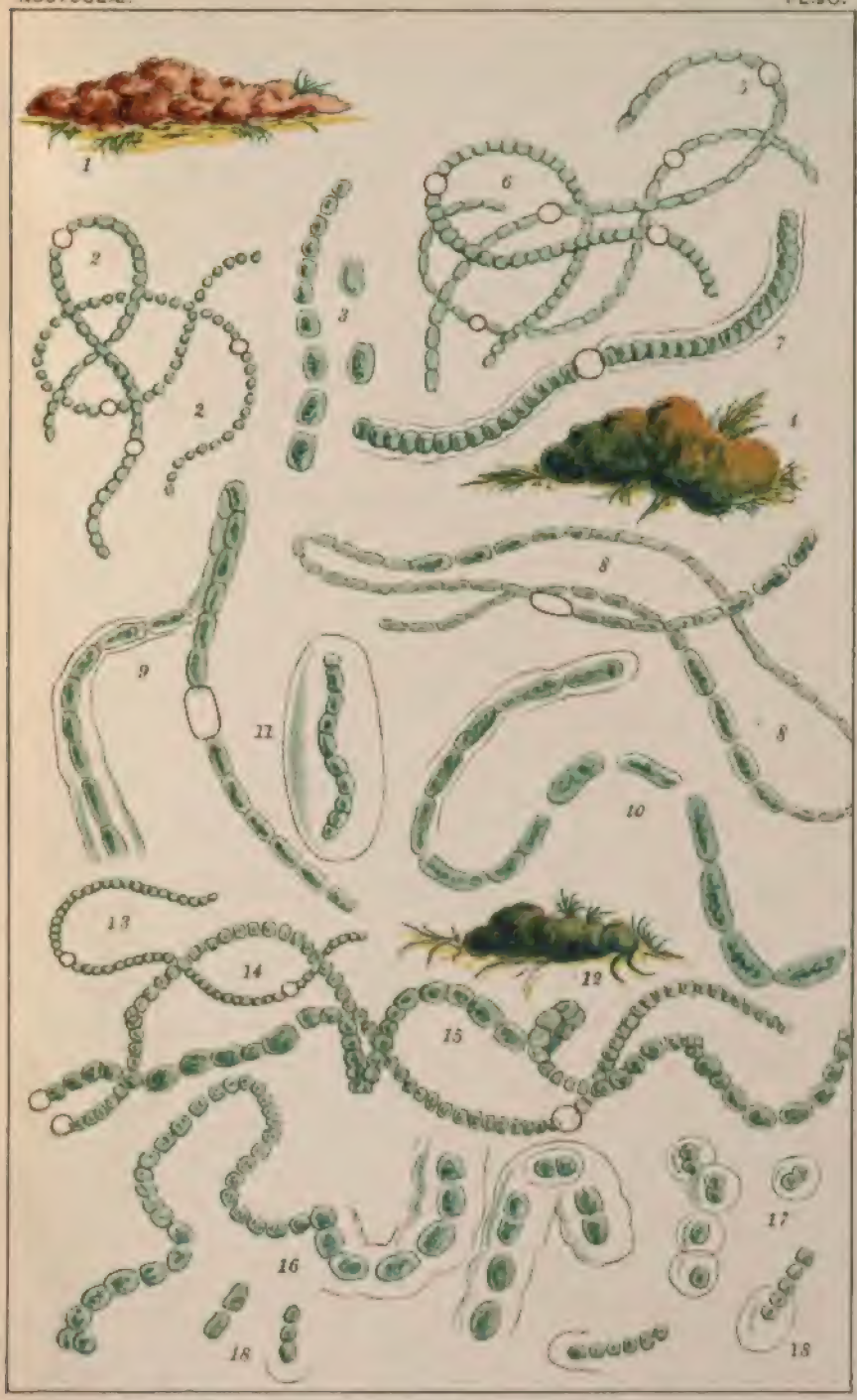


1. Gloeothece cystifera. Rabh. 2. Gloeothece granosa. Rabh. 3. Aphanothece prasina. Br. 4. Aphanothece stagnina. Br. 5. Hæmatococcus Hassallii. Kütz.

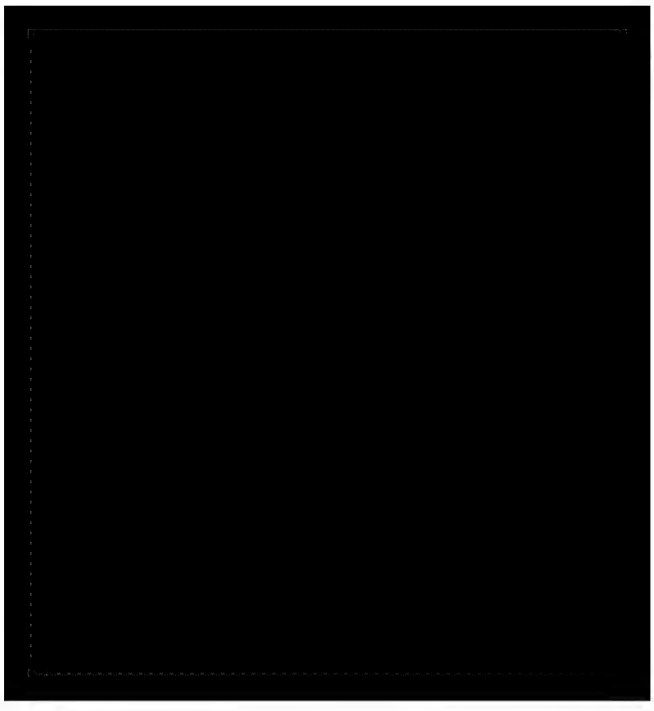


1—11. Nostoc Linckia. Born. 12—15. Nostoc piscinale. Kütz.



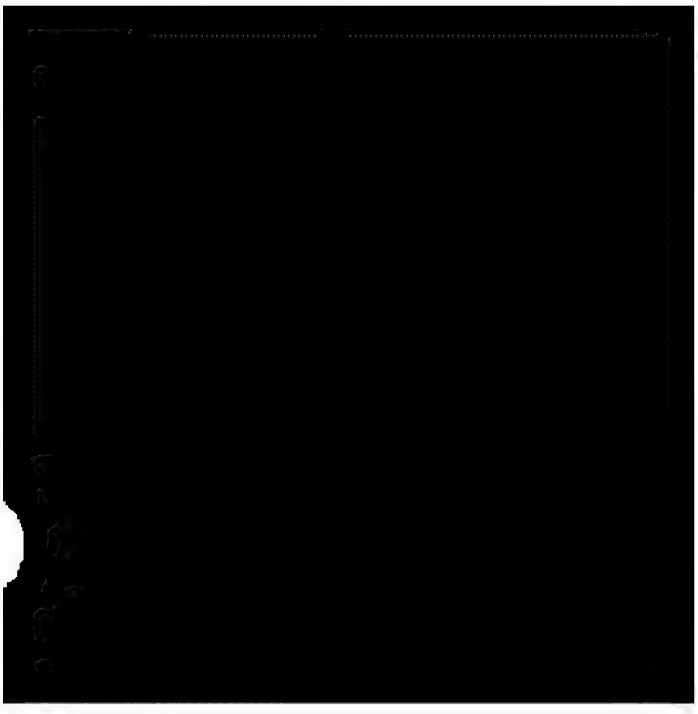


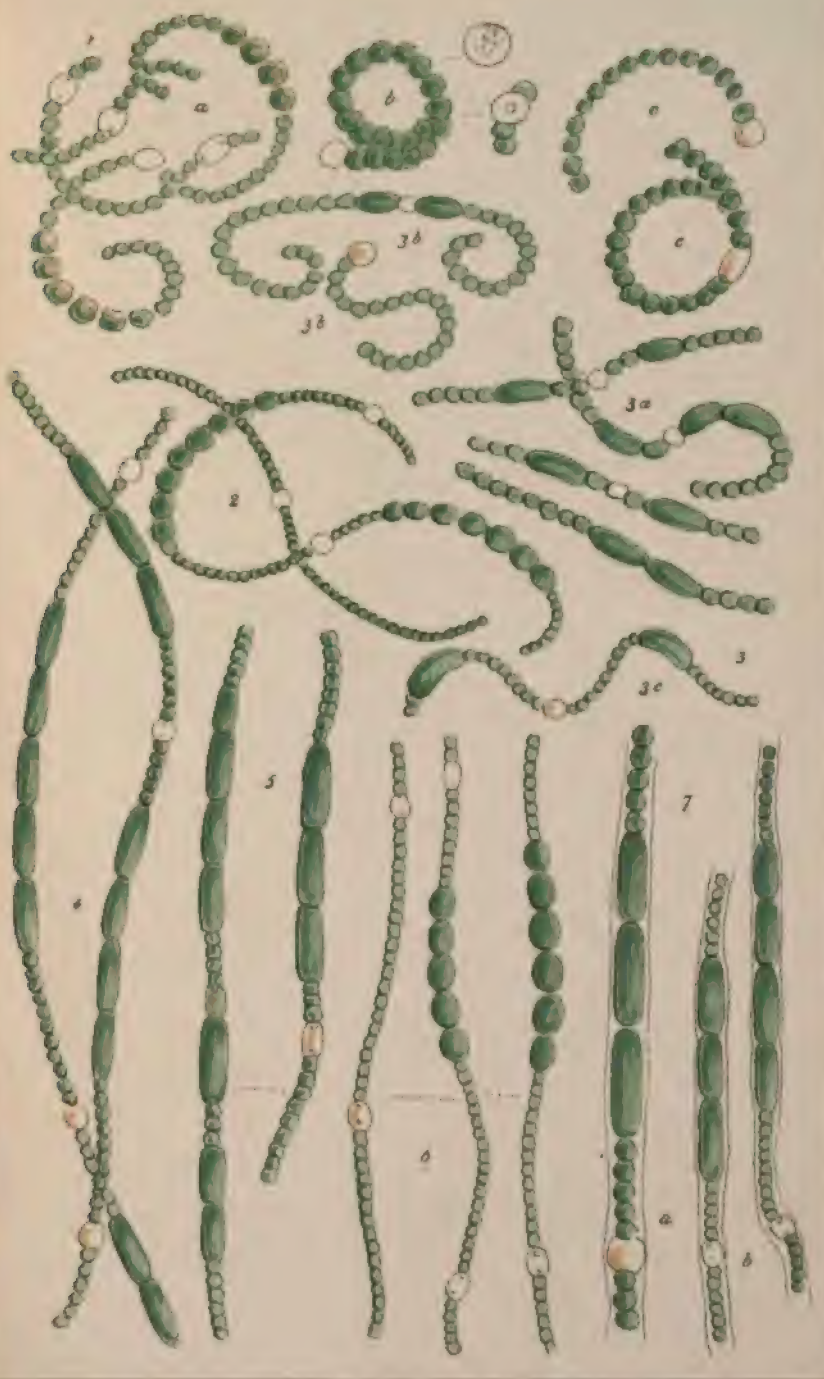
1—3. *Nostoc carneum. Ag.* 4—7. *Nostoc spongiæforme. Ag.*
8—11. *Nostoc ellipsosporum. Desm.* 12—18. *Nostoc muscorum. Ag.*



1—3. *Nostoc lumifusum. Carm.* 4—7. *Nostoc commune. Vauch.*
8—11. *Nostoc sphæricum. Vauch.* 12—15. *Nostoc rupestre. Kutz.*

1—3. Nostoc macrosporum. Men. *4—6. Nostoc cæruleum. Lyngb.*
7—9. Nostoc pruniforme. Ag. *10—17. Nostoc verrucosum. Vauch.*

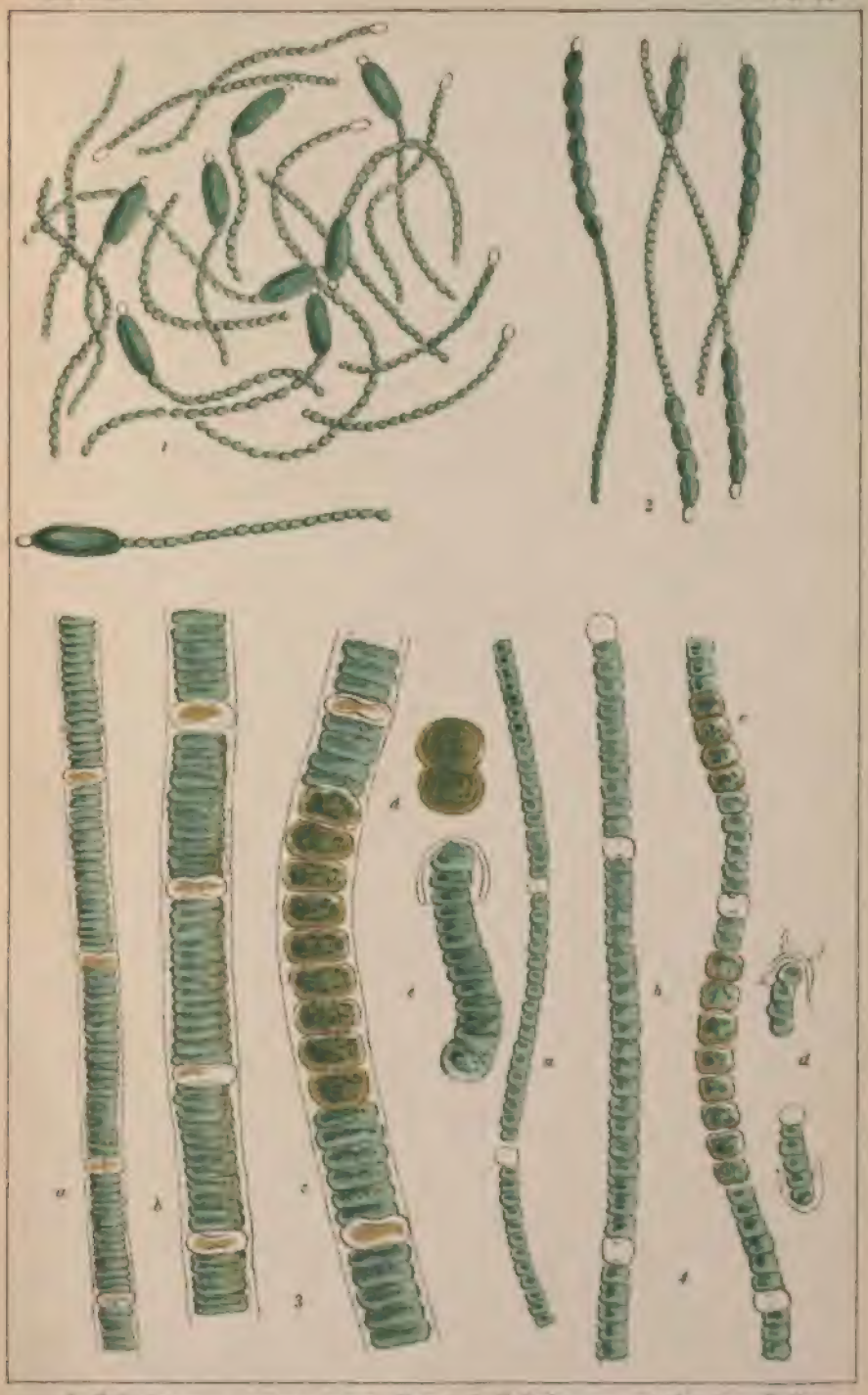




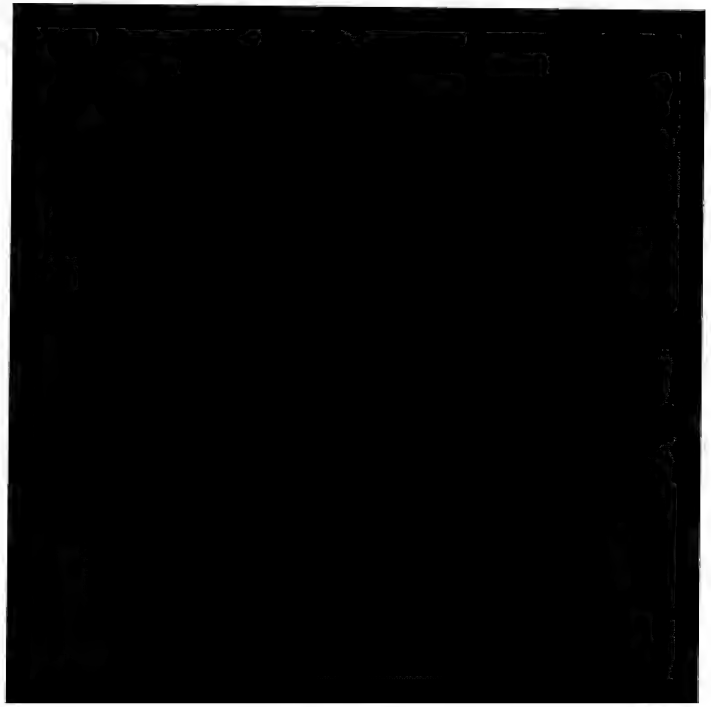
Anabaena flos-aquæ. Fr. 2. Anabaena variabilis. K. 3. Anabaena Hassallii. N. & W. Anabaena inæqualis. (Ralfs.) 5. Anabaena Thwaitesii. (Ralfs.) 6. Anabaena oscillarioides. (Bory.) 7. Anabaena Smithii. (Ralfs.)

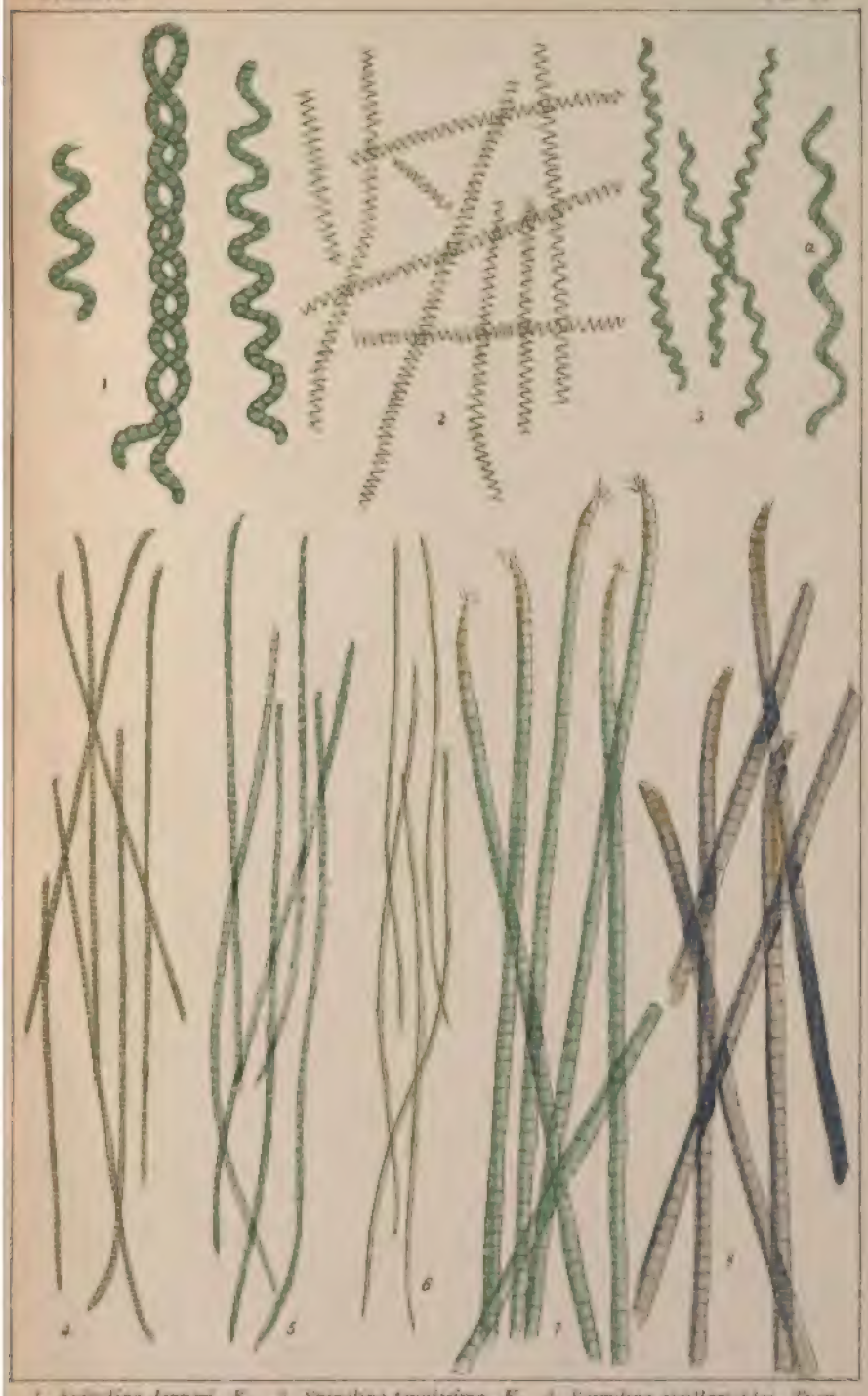
[redacted]

Anabæna Ralfsii. (Kutz.) 2. *Aphanizomenon flos-aquæ. Morr.* 3. *Sphærozyga Carmichaeli. Harv.* *Sphærozyga Brommei. (Thur.)* 5. *Sphærozyga Jacobi. Ralfs.* 6. *Sphærozyga Moorana. Ralfs.* *Sphærozyga elastica. (Ralfs.)* 8. *Sphærozyga leptosperma. Ralfs.* 9. *Sphærozyga Berkeleyana. Thwaites.*

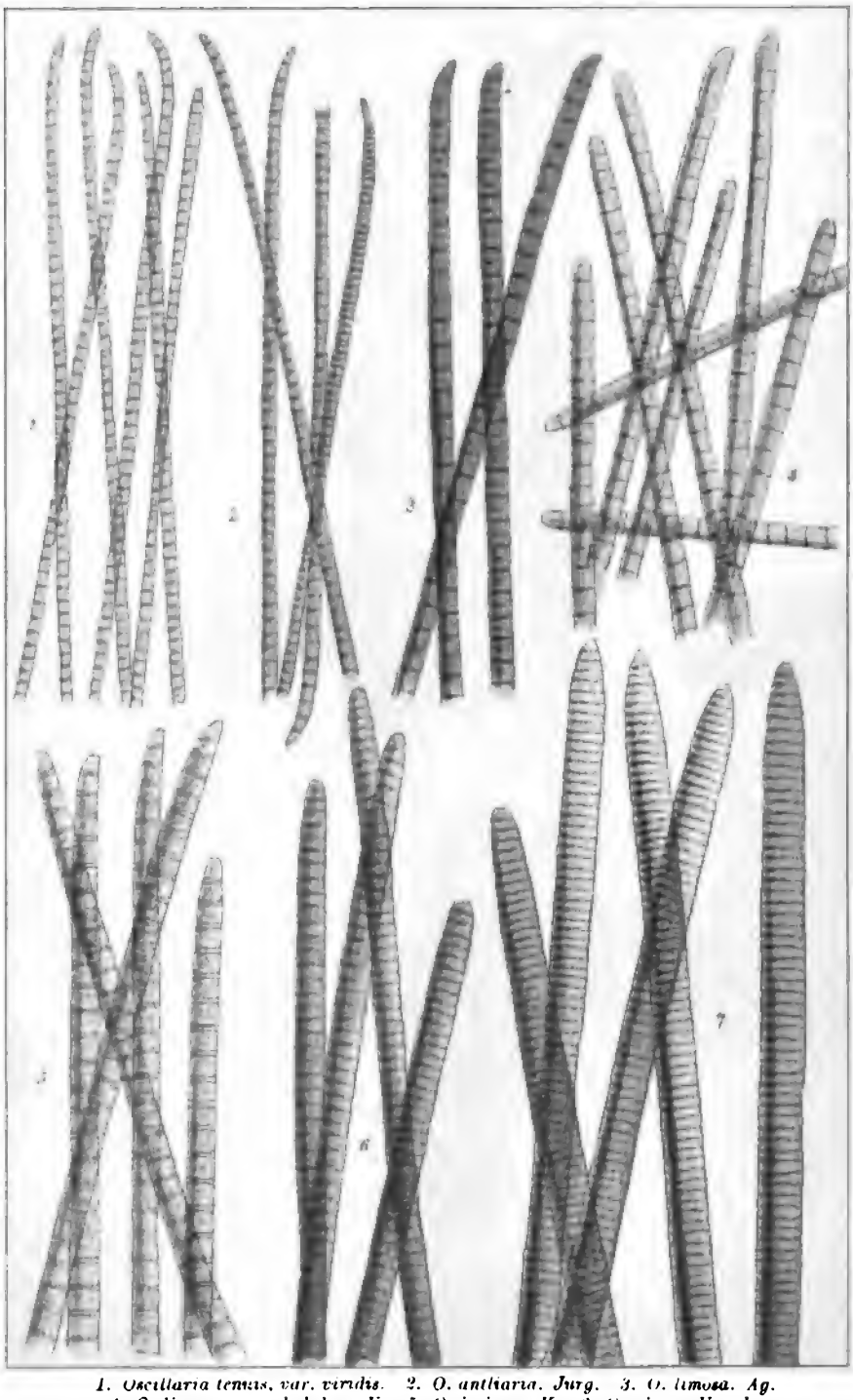


1. *Cylindrospermum macrospermum*, Desm. 2. *Cylindrospermum catenatum*, Ralf's.
3. *Nodularia litorea*, Thur. 4. *Nodularia Harveyana*, Thur.

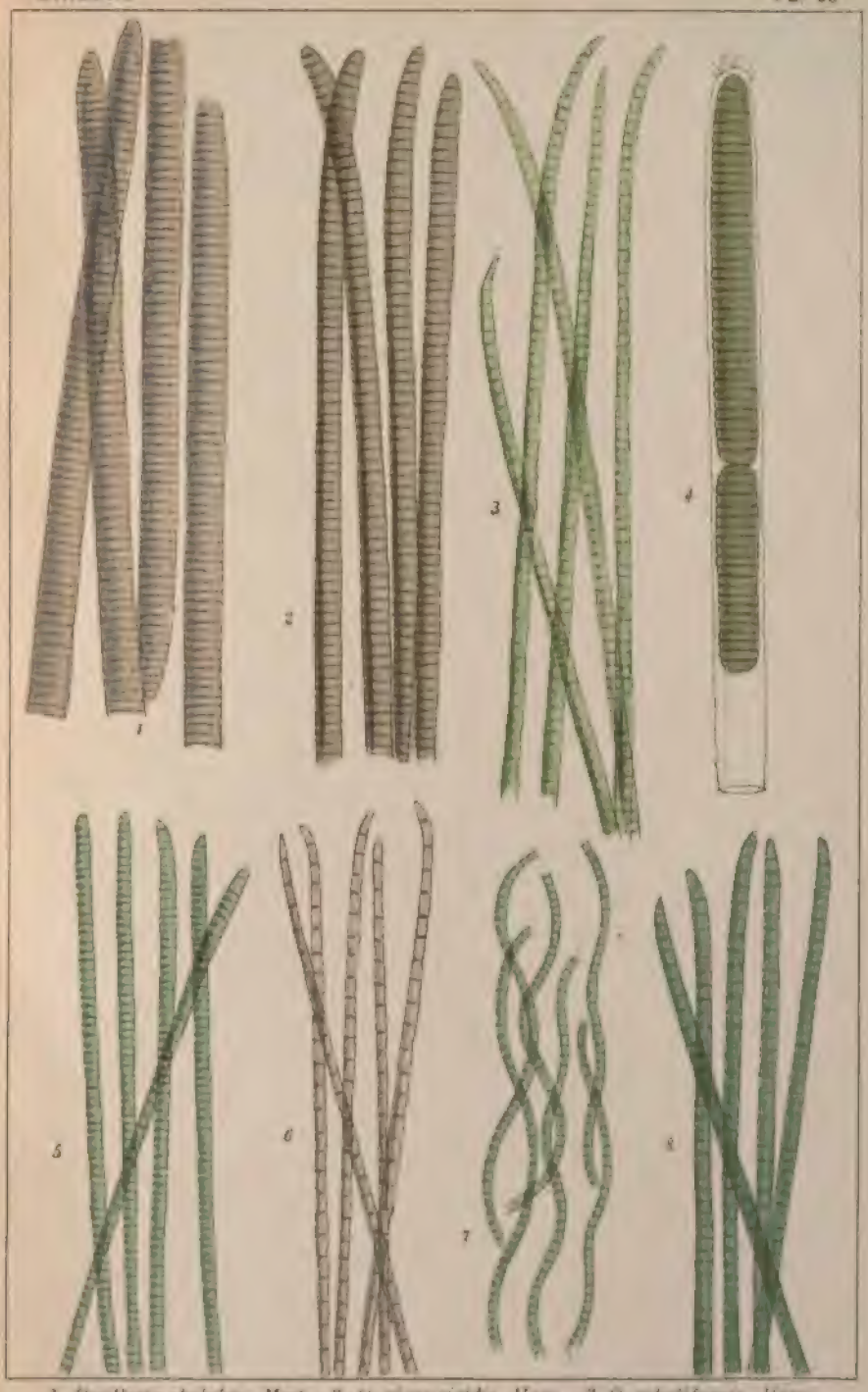




1. Spirulina Jenneri. K. 2. Spirulina tenuissima. K. 3. Spirulina oscillarioides. Turp.
4. Oscillaria tenerrima. K. 5. O. leptotricha. K. 6. variety, splendida. Grev.
7. O. subfusca. Vauch. 8. O. tenuis. Ag.



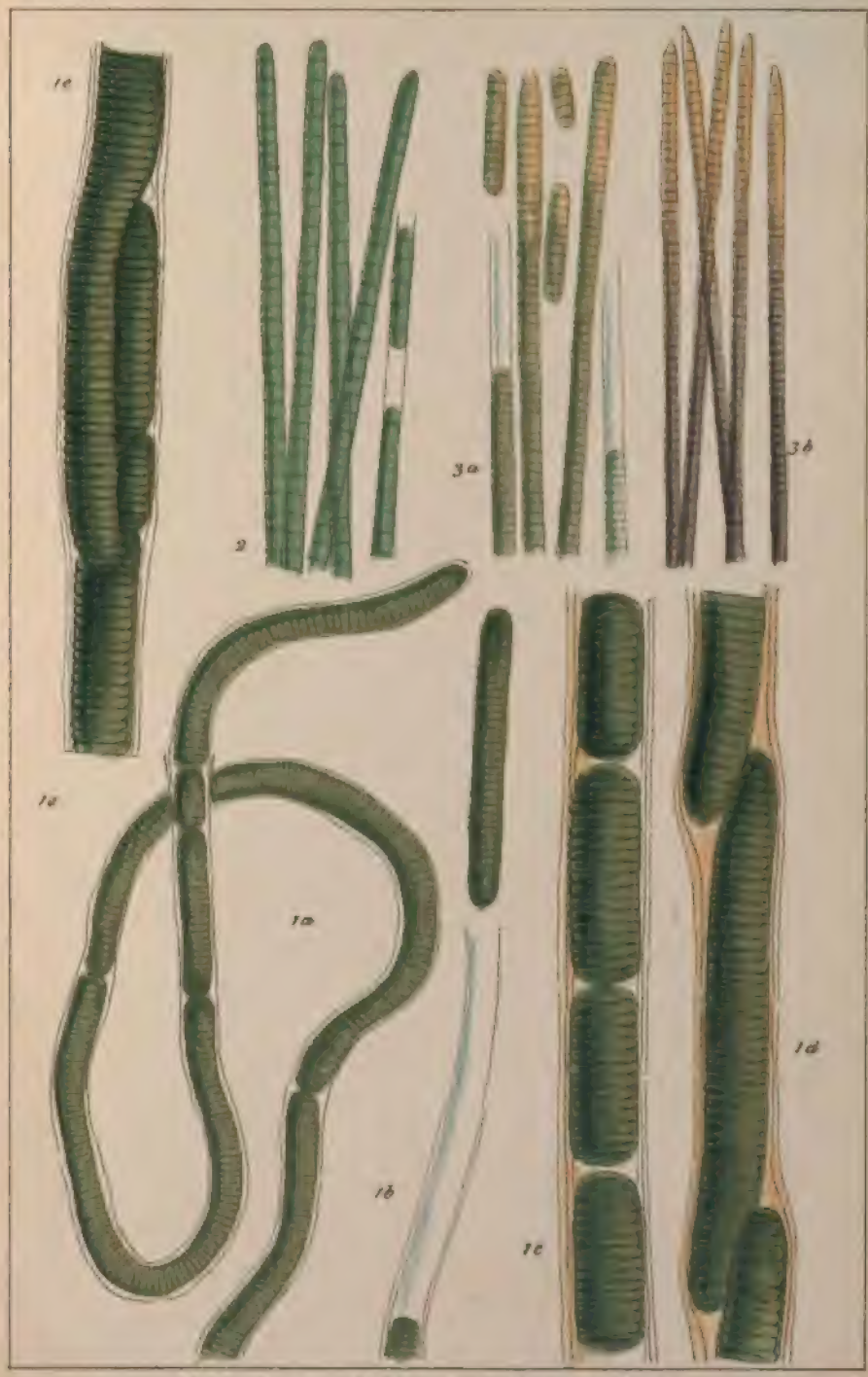
1. Oscillaria tenuis, var. viridis. 2. O. antliaria. Jurg. 3. O. limosa. Ag. 4. O. limosa, var. chalybea. K. 5. O. irrigua. K. 6. O. nigra. Vauch. 7. O. Frolichii. Kutz



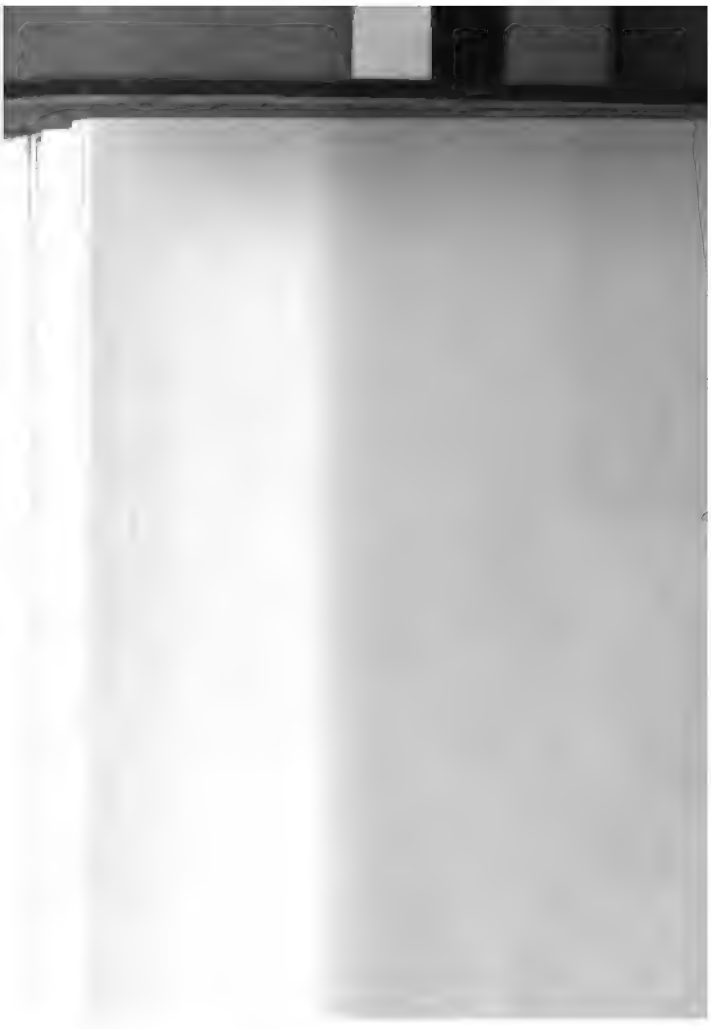
1. *Oscillaria chalybea. Mert.* 2. *O. nigro-viridis. Harv.* 3. *O. subtiliformis. Harv.* 4. *O. insignis. Harv.* 5. *O. aeruginescens. Drum.* 6. *O. violacea. Johnst.* 7. *O. spiralis. Carm.* 8. *O. muscorum. Carm.*

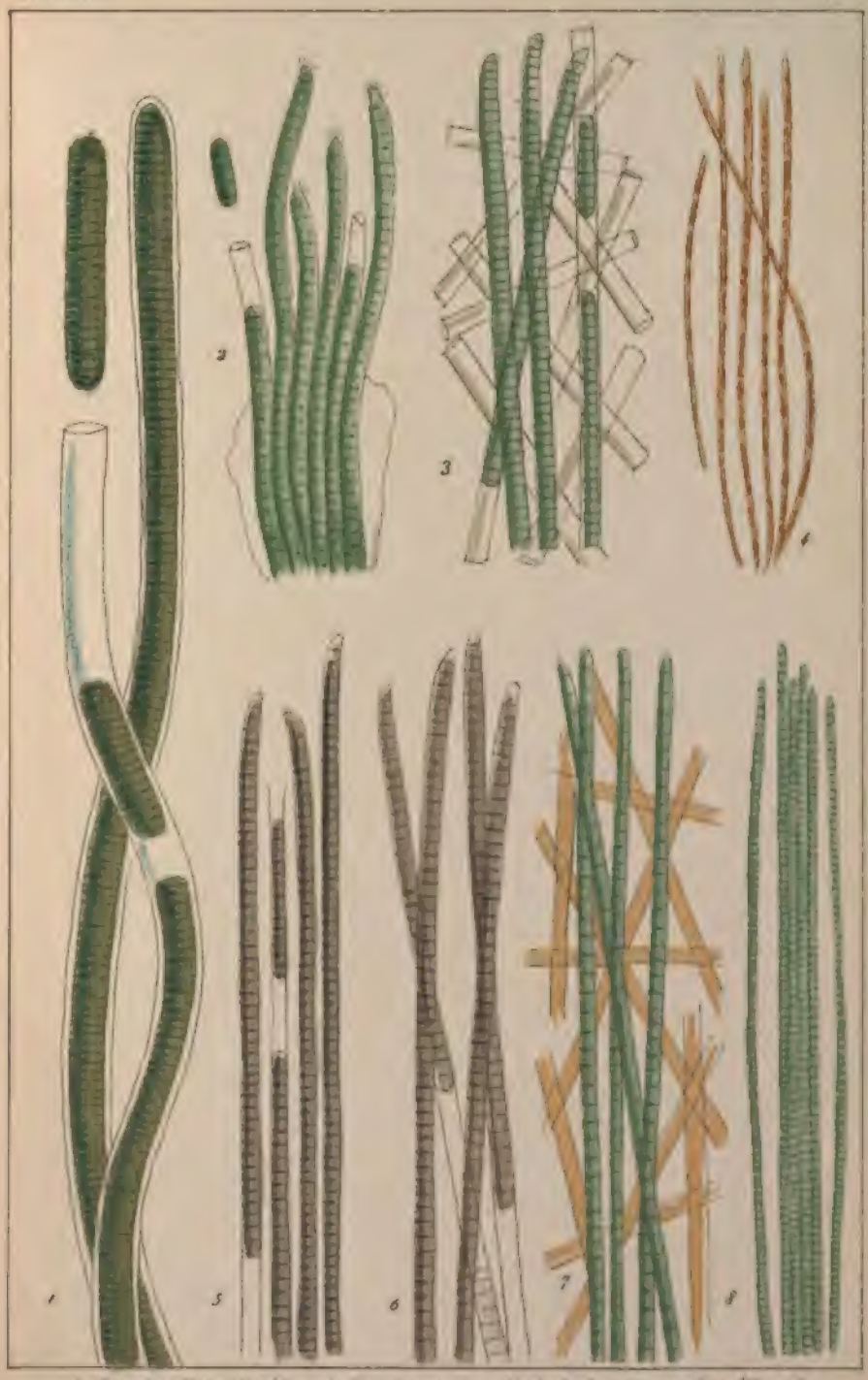
1. Microcoleus gracilis. Hass. 2. Microcoleus terrestris. Desm.

1. Microcoleus chthonoplastes. Thur. 2. Inactis Crouzelii. Thur.
3. Inactis tinctoria. Thur.

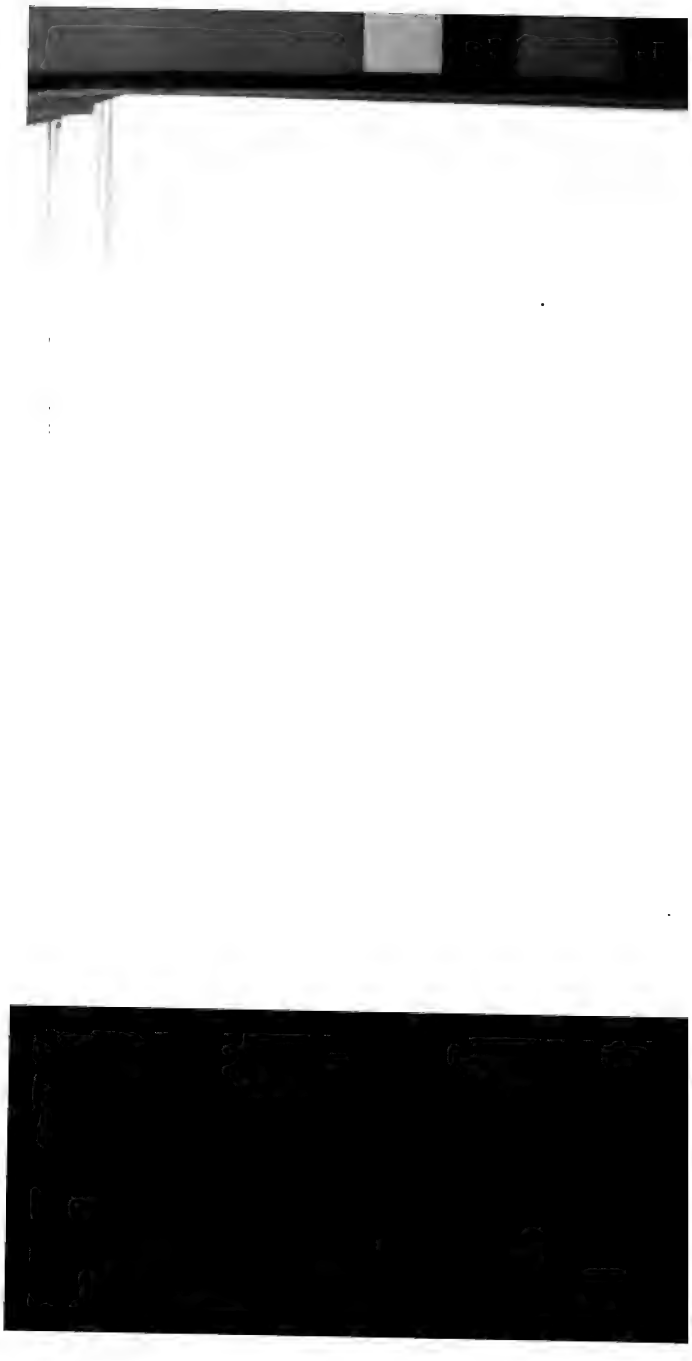


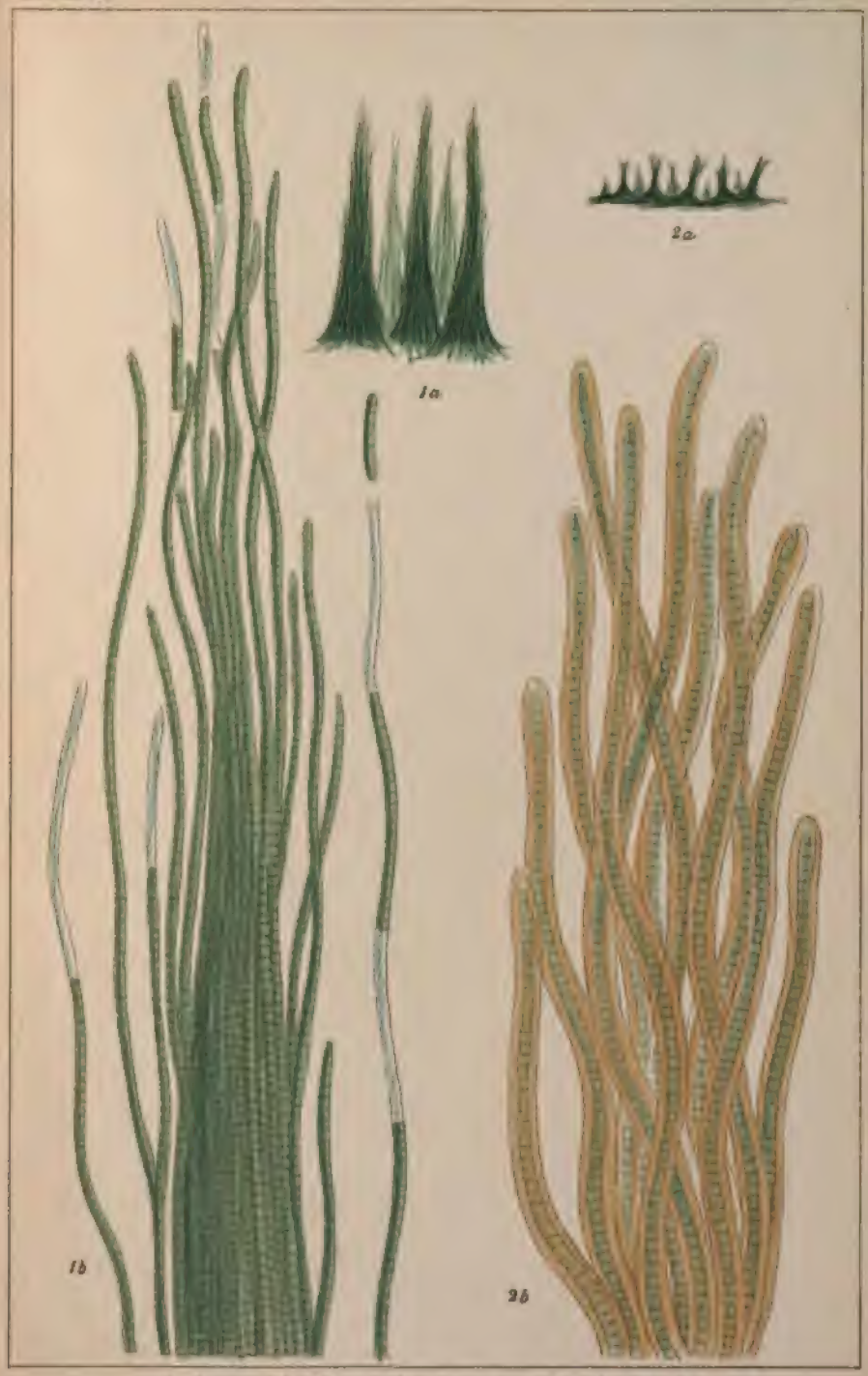
1. *Lyngbya æstuarii*, Lieb. 2. *Lyngbya rupestris*, Ag.
3. a. b. *Lyngbya subfusca*, Ag.





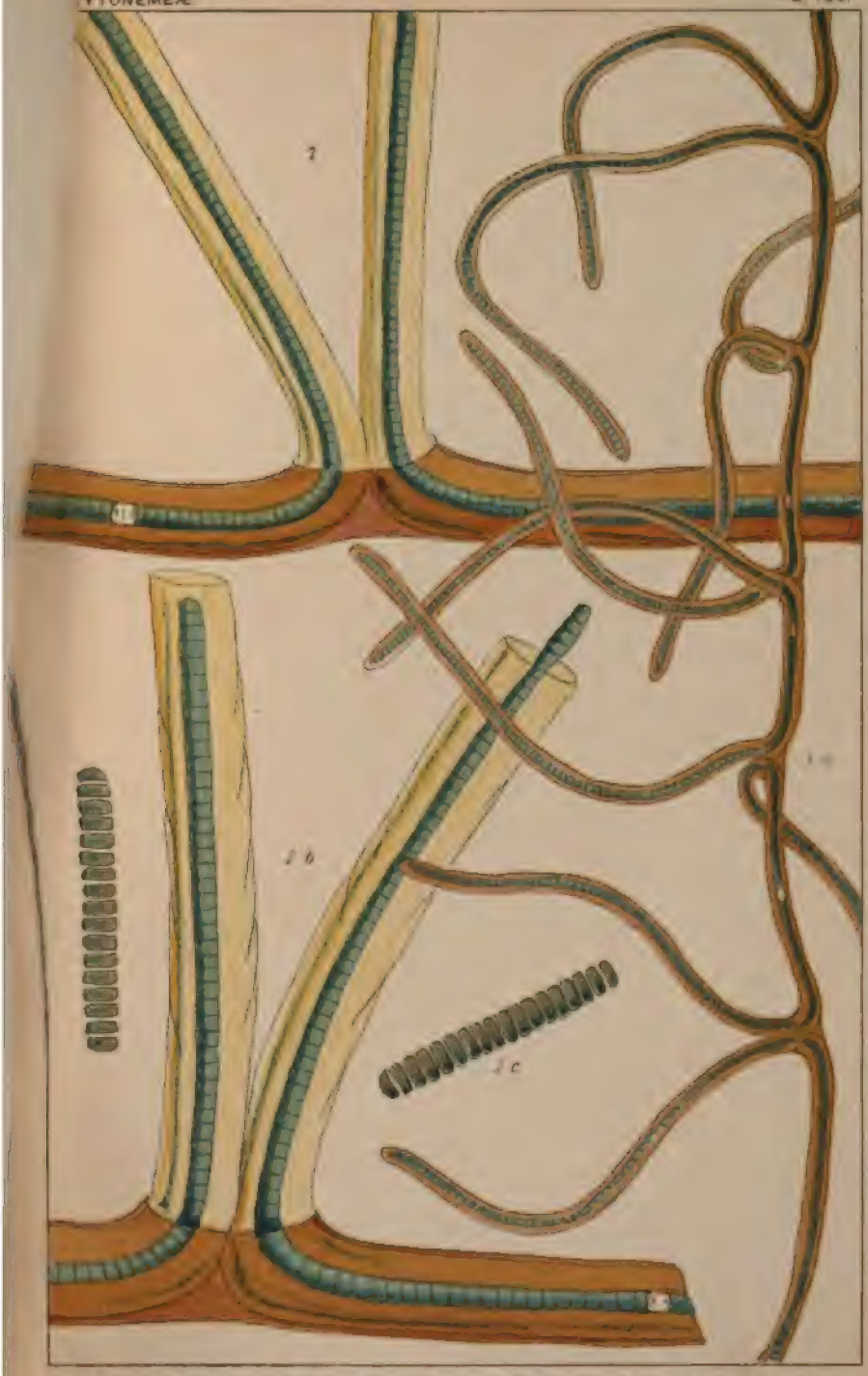
1. Lyngbya littoralis. (Carm.) Lyngbya corium. (Ag.) 2. Lyngbya turfosa. (Carm.)
4. Lyngbya ochracea. Thur. 5. Lyngbya vulgaris. K. 6. Lyngbya vulgaris. var. myochroa.
7. Lyngbya papyrina. K. 8. Lyngbya inundata. K.



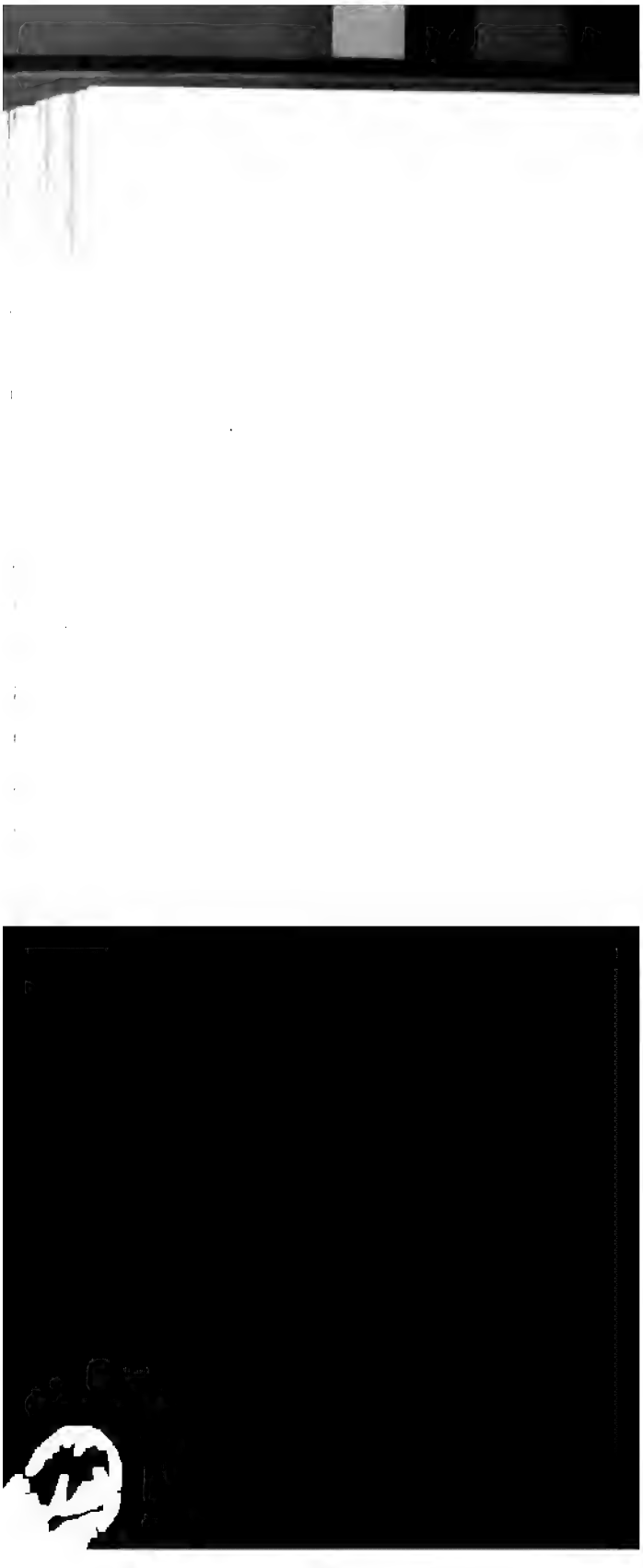


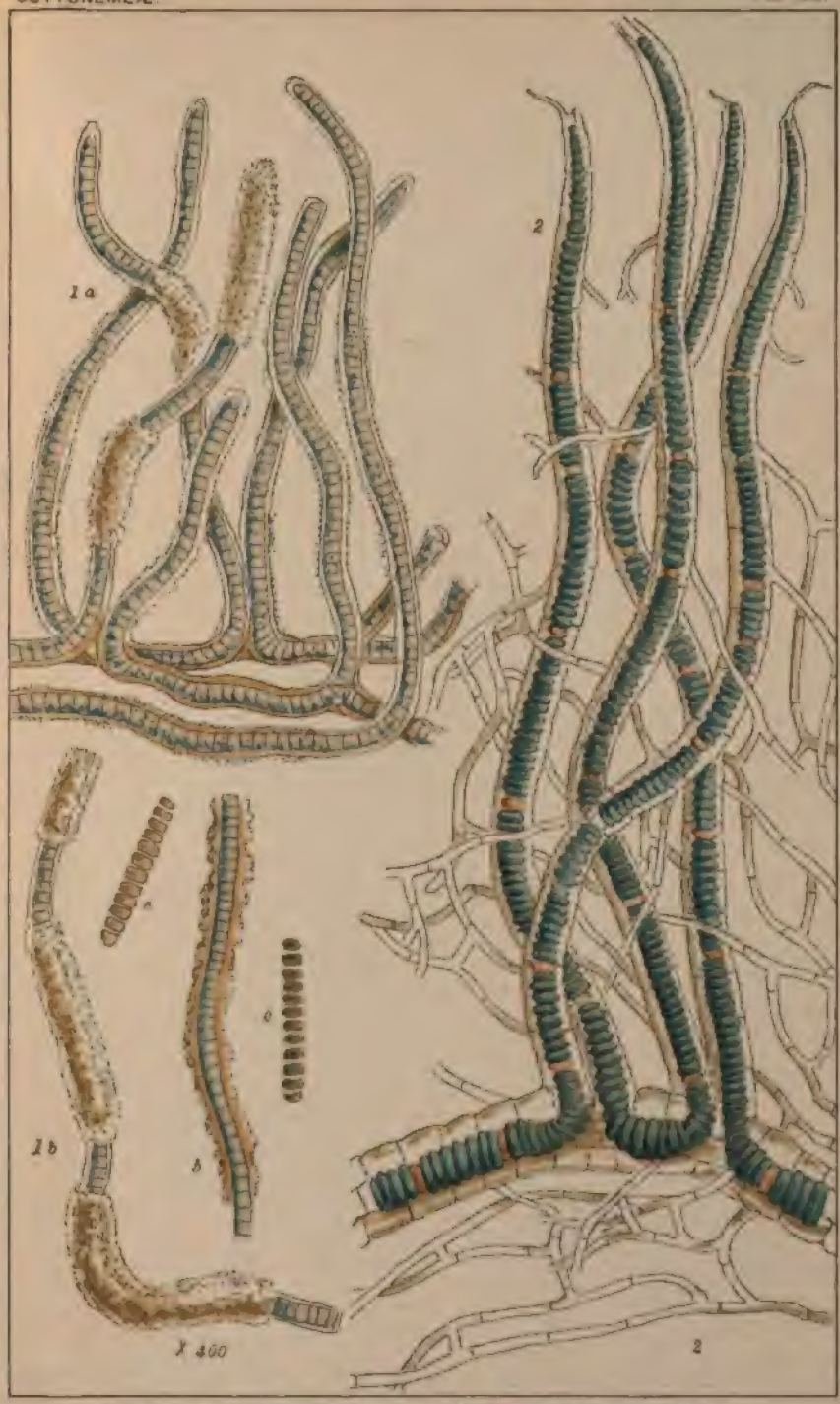
1. Symploca Ralfsiana. Kutz. 2. Symploca lucifuga. Harv.

1. Plectonema mirabile, Thur. 2. Plectonema Kirchneri, Cooke.



1. *Scytonema myochroum. Ag.* 2. *Scytonema natans. Breb.*





1. *Scytonema cinereum. Kütz.* 2. *Scytonema interruptum (Carm.)*

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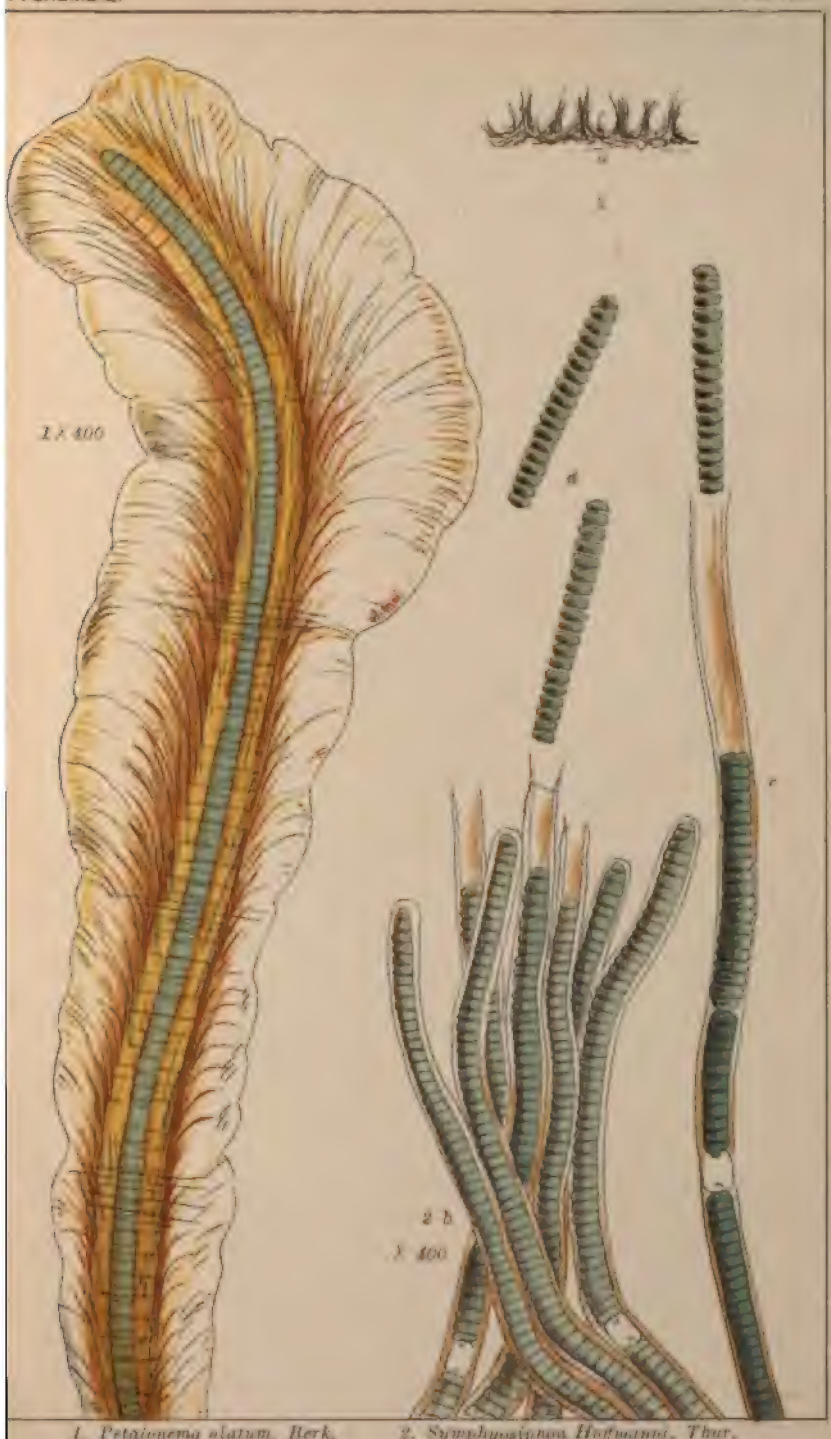
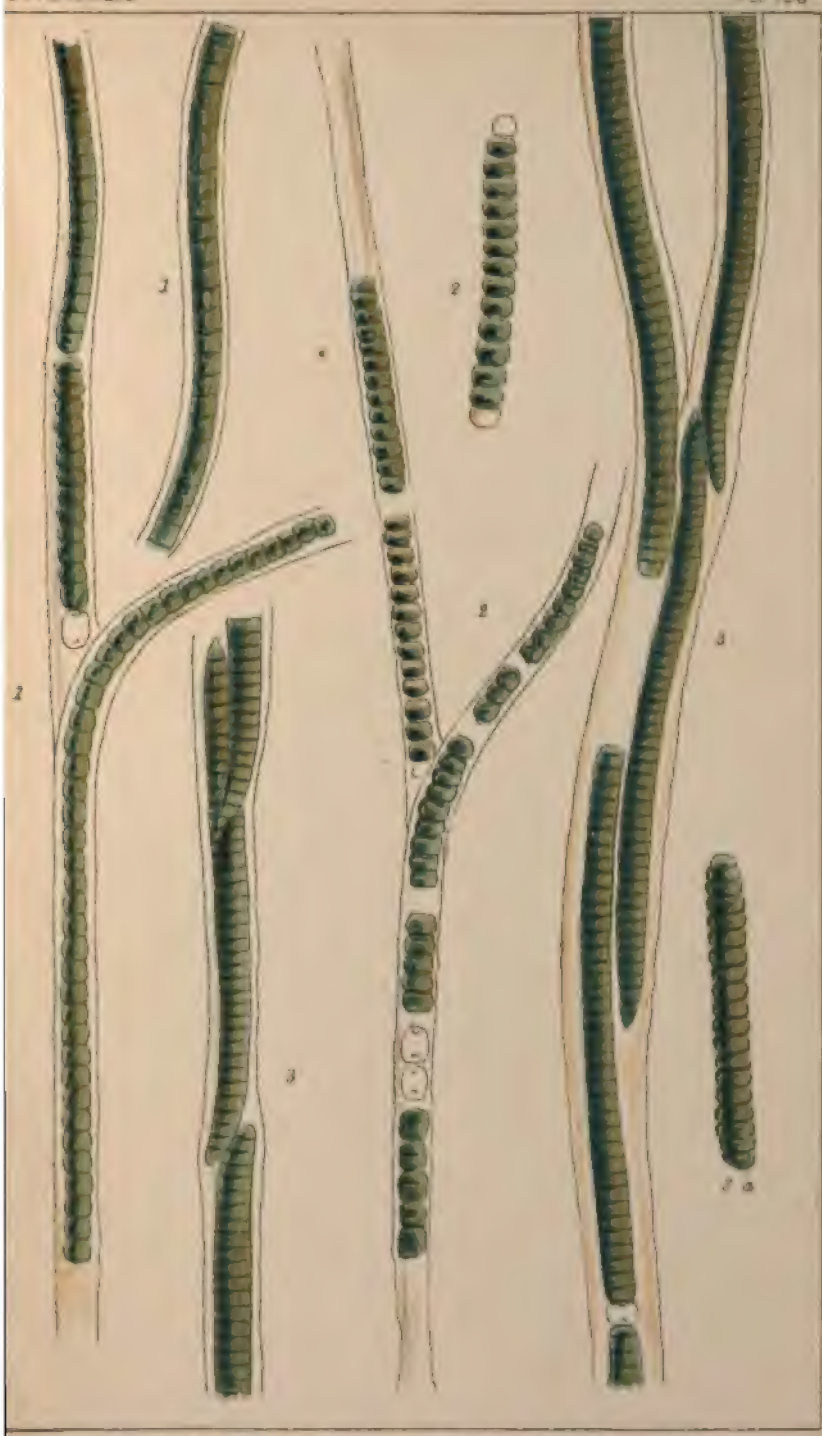


1. *Petalonema alatum. Berk.* 2. *Symphysiphon Hoffmanni. Thur.*



1. *Tolypothrix fasciculata.* (*Ag.*) 2. *Tolypothrix distorta.* *Kütz.*
3. *Tolypothrix ciriosa* (*Carm.*).

[redacted]

1. *Tolypothrix agagropila. Kutz.* 2. *Tolypothrix agagropila, var. pygmæa. Kutz.*
3. *Tolypothrix conctilis. Kutz.*

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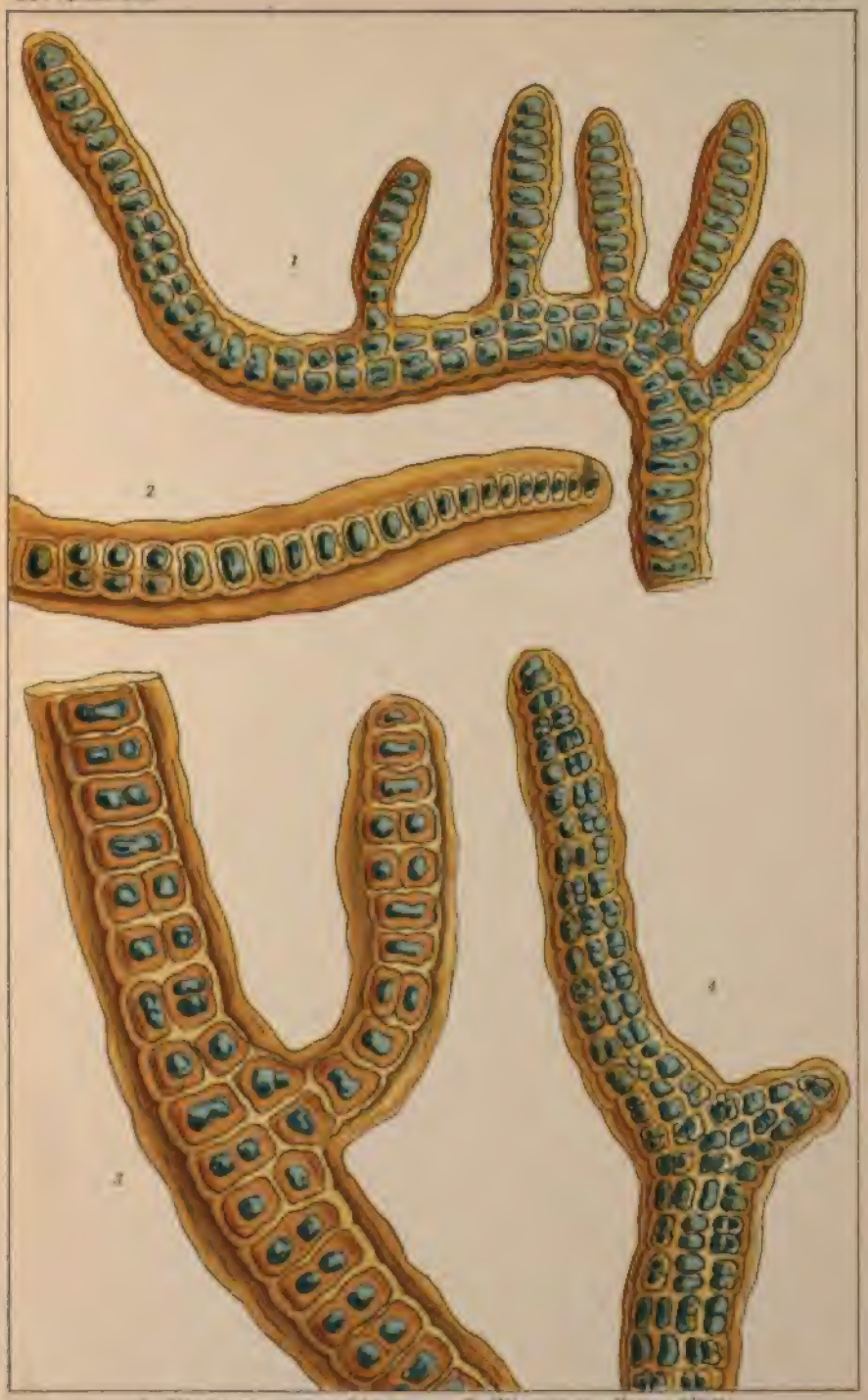

1. *Stigonema mamillosum* (Ag.). 2. *Stigonema velutinum* (Dill.).
3. *Stigonema hormidioides* (Desv.). 4. *Stigonema panniforme* (Ag.).

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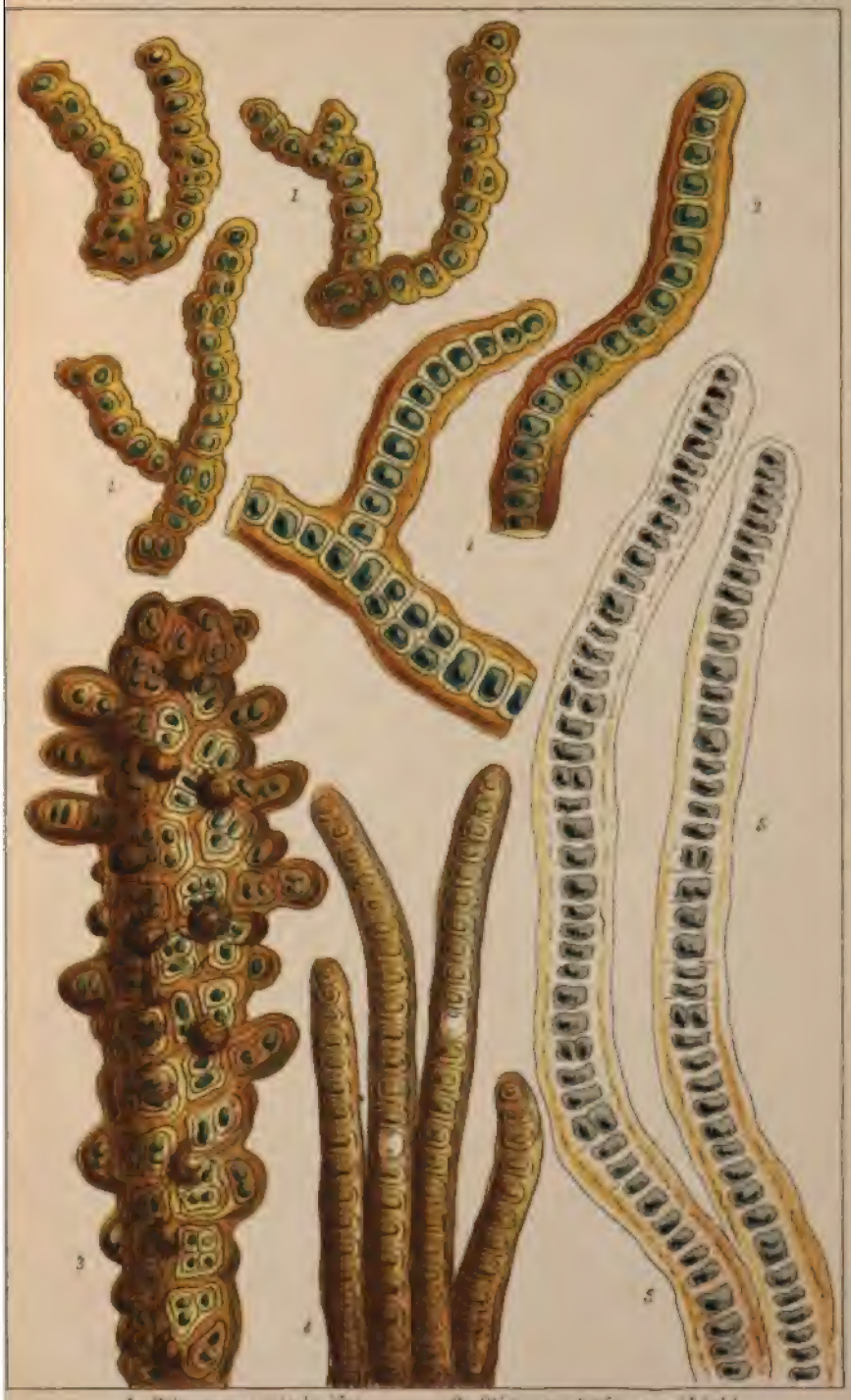
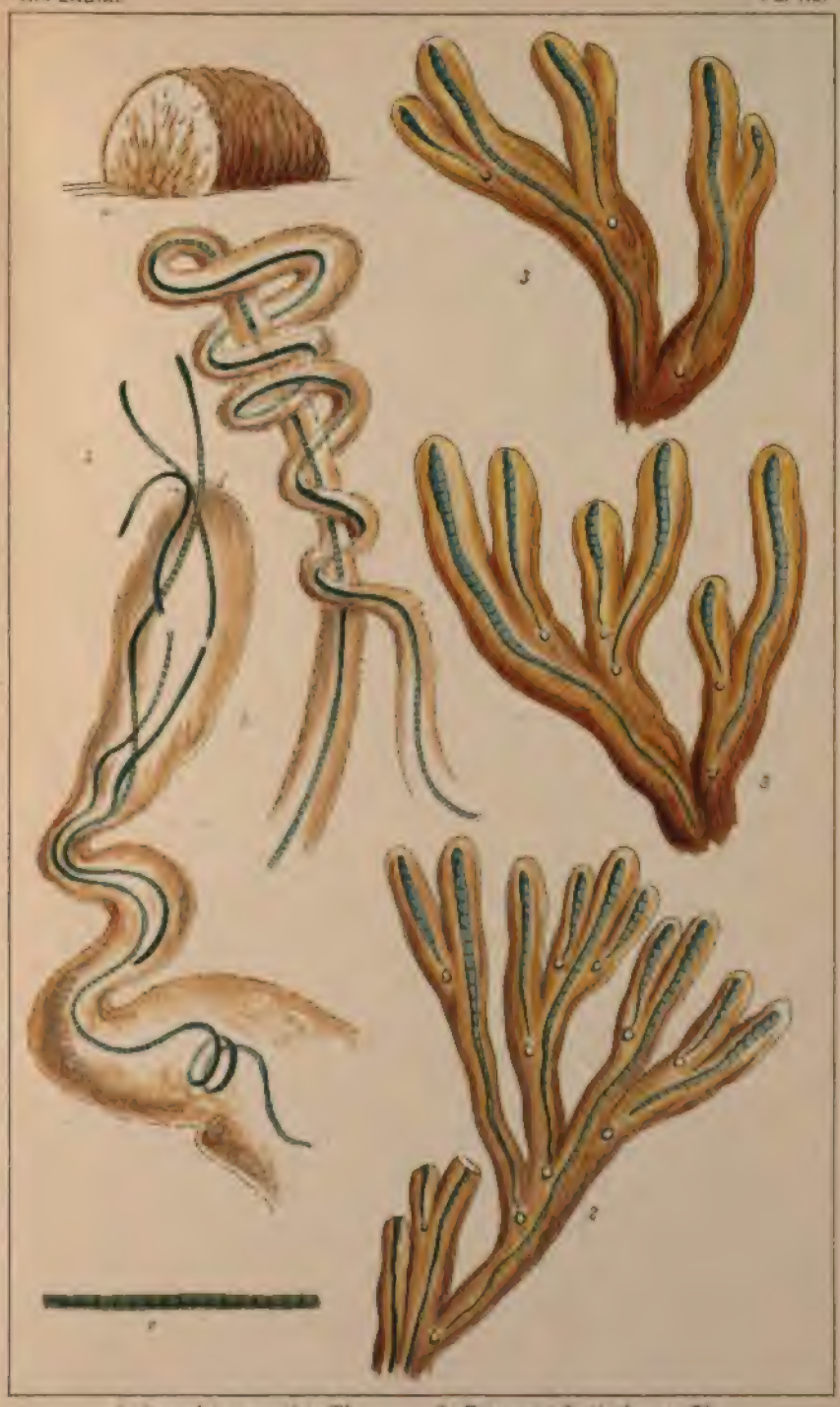
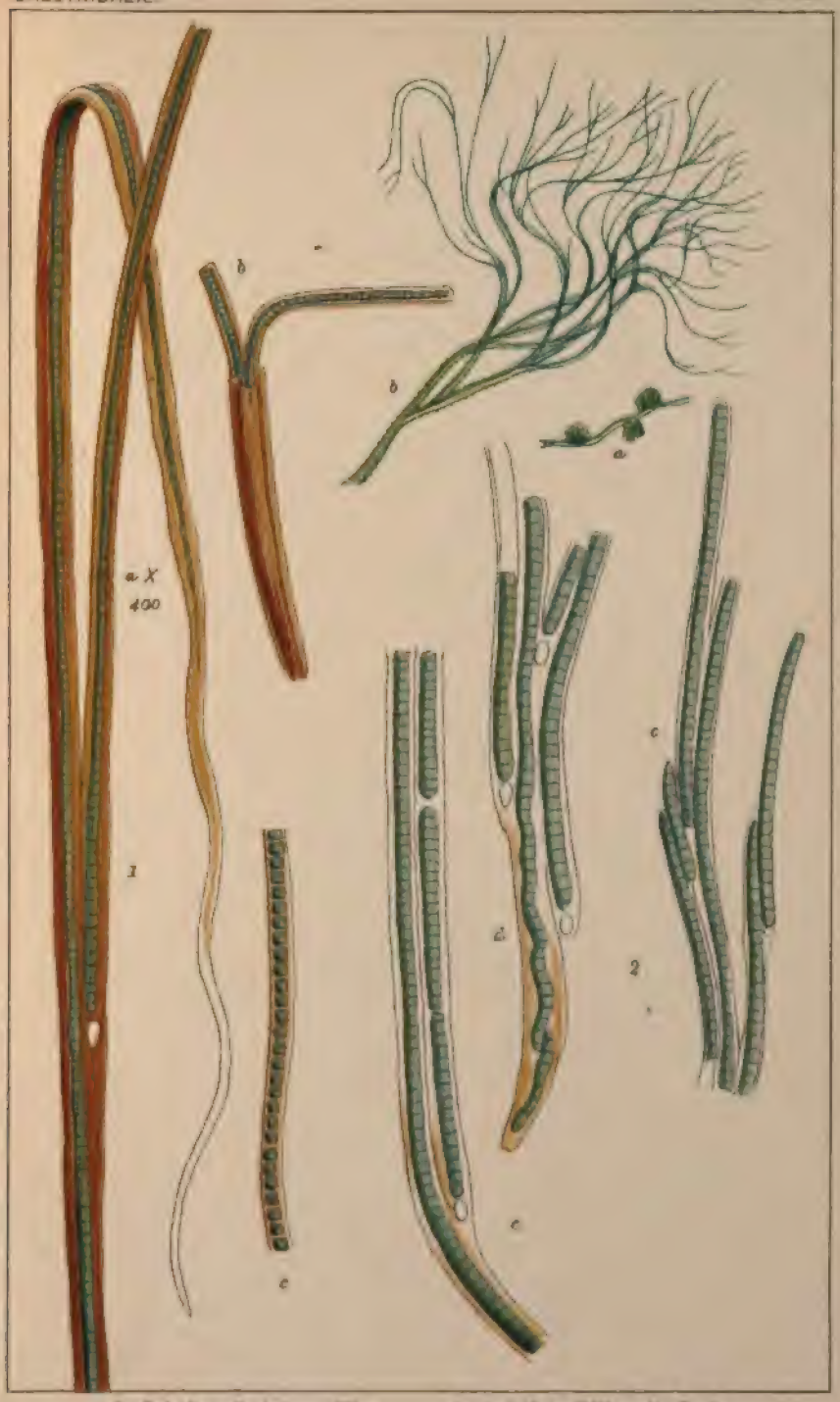


1. *Stigonema varicola* Ag. 2. *Stigonema turfaceum* (Link)
3. *Stigonema mamillosum*. Ag. 4. *Stigonema compactum*. Ag.
5. *Hapalosiphon byssoideus*, Thur.



1. Dasygloia amorpha. Thw. *2. Petronema fruticulosum. Thw.*
3. Scytonema crustaceum. Ag.



1. *Calothrix Orsiniana. Thur.* 2. *Calothrix Dillwynii. Berk.*

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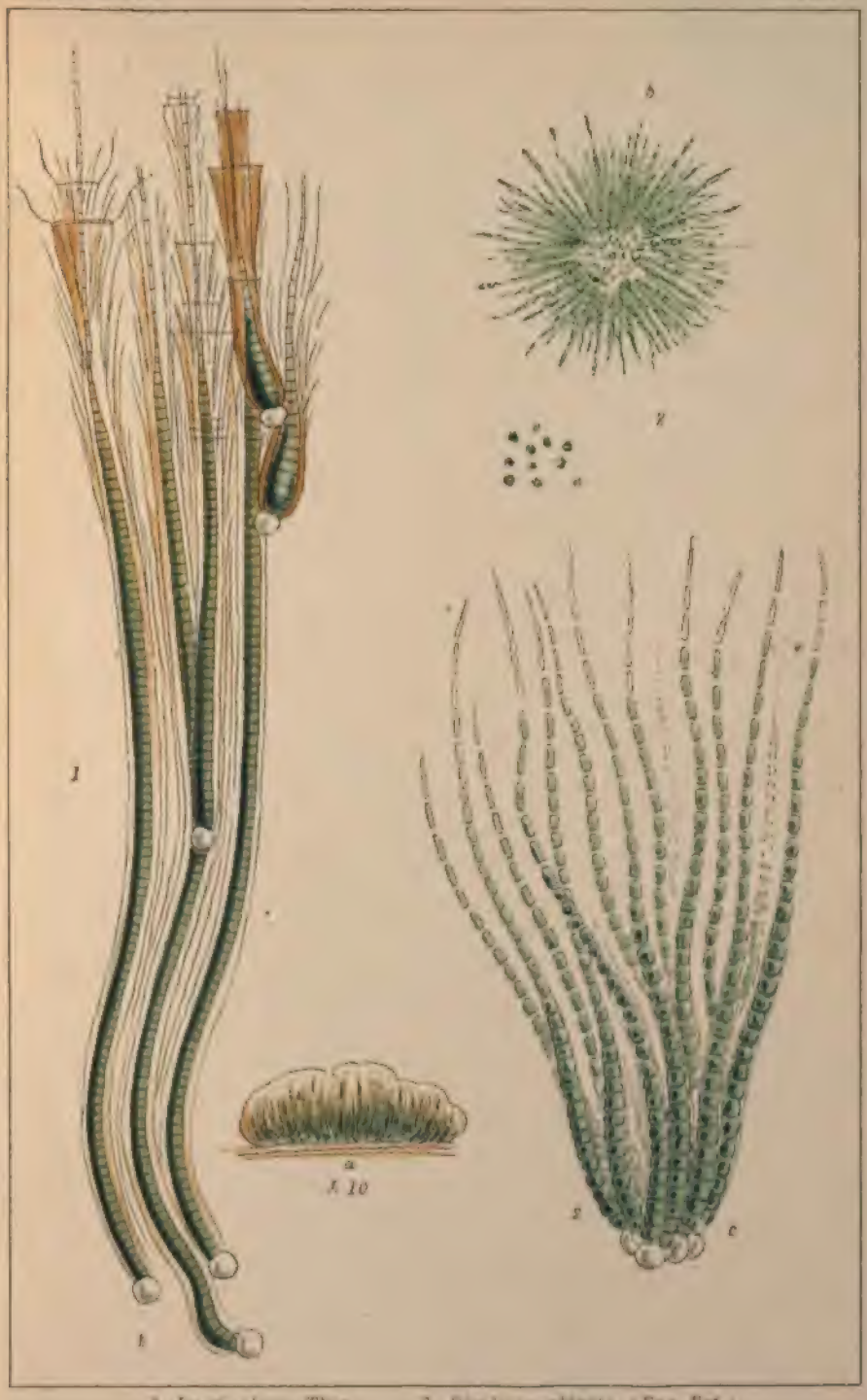
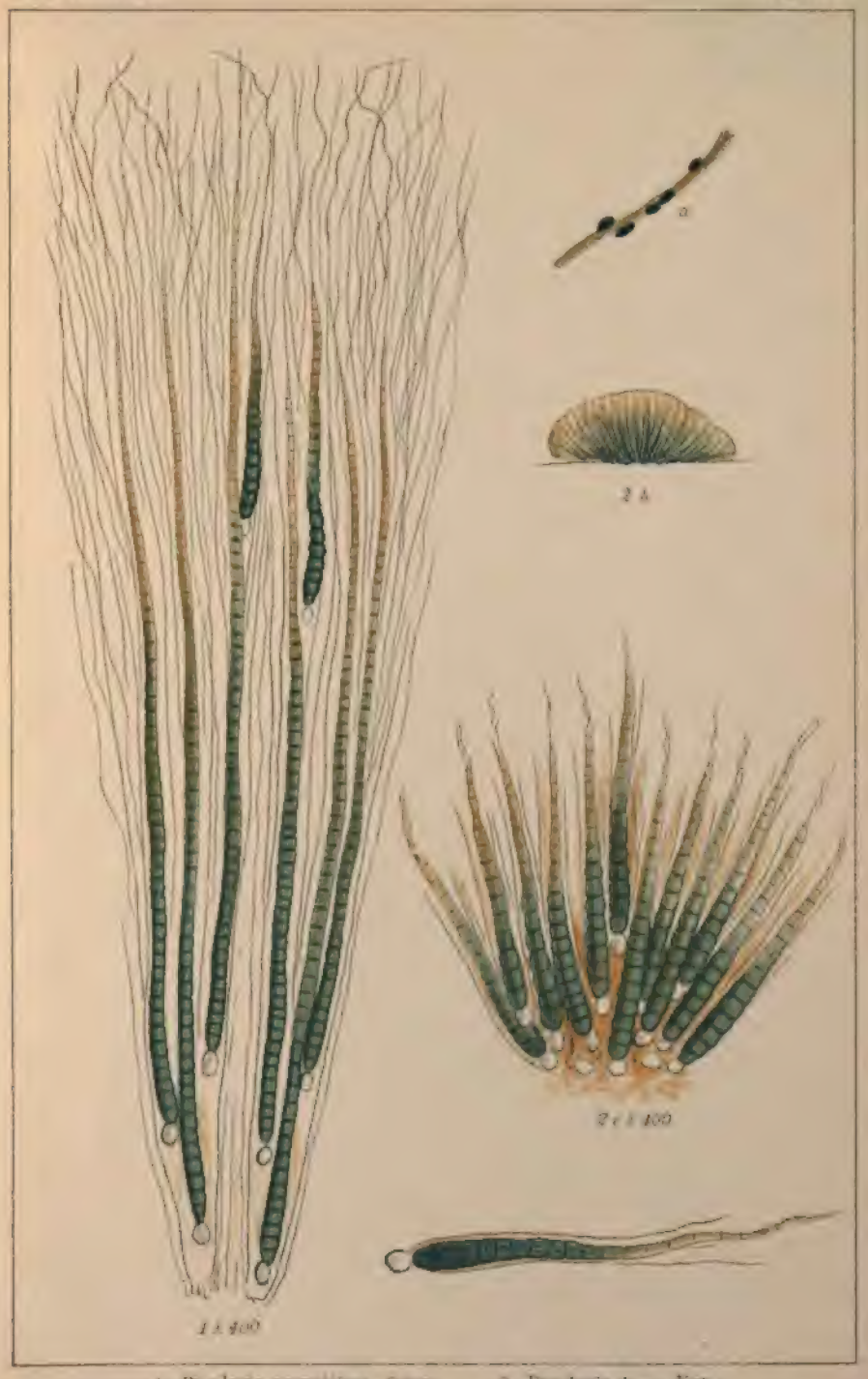


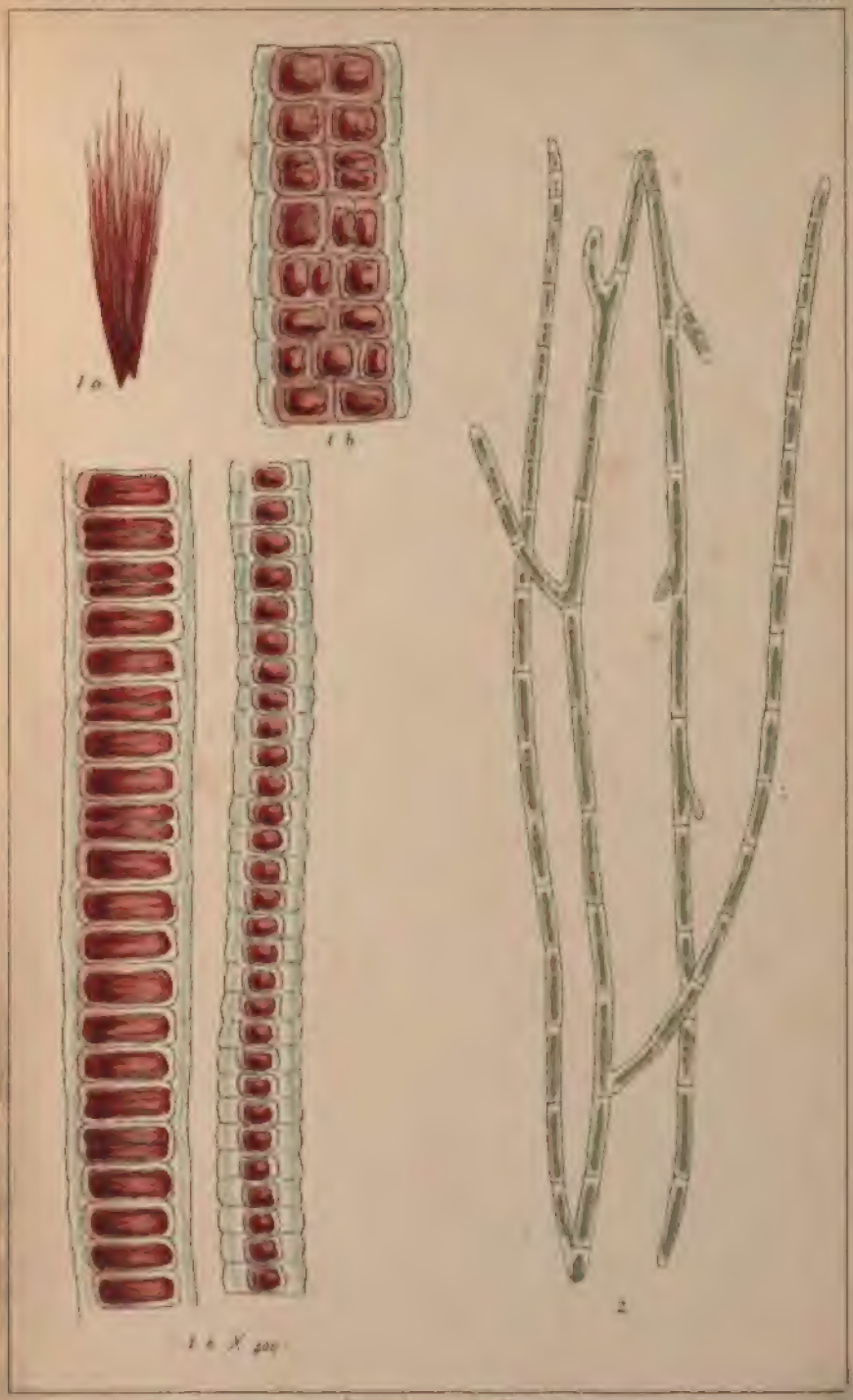
1. *Isactis plana. Thur.* 2. *Rivularia echinata. (Eng. Bot.)*



1. *Rivularia granulifera*. Carm. 2. *Rivularia dura*. Kütz.

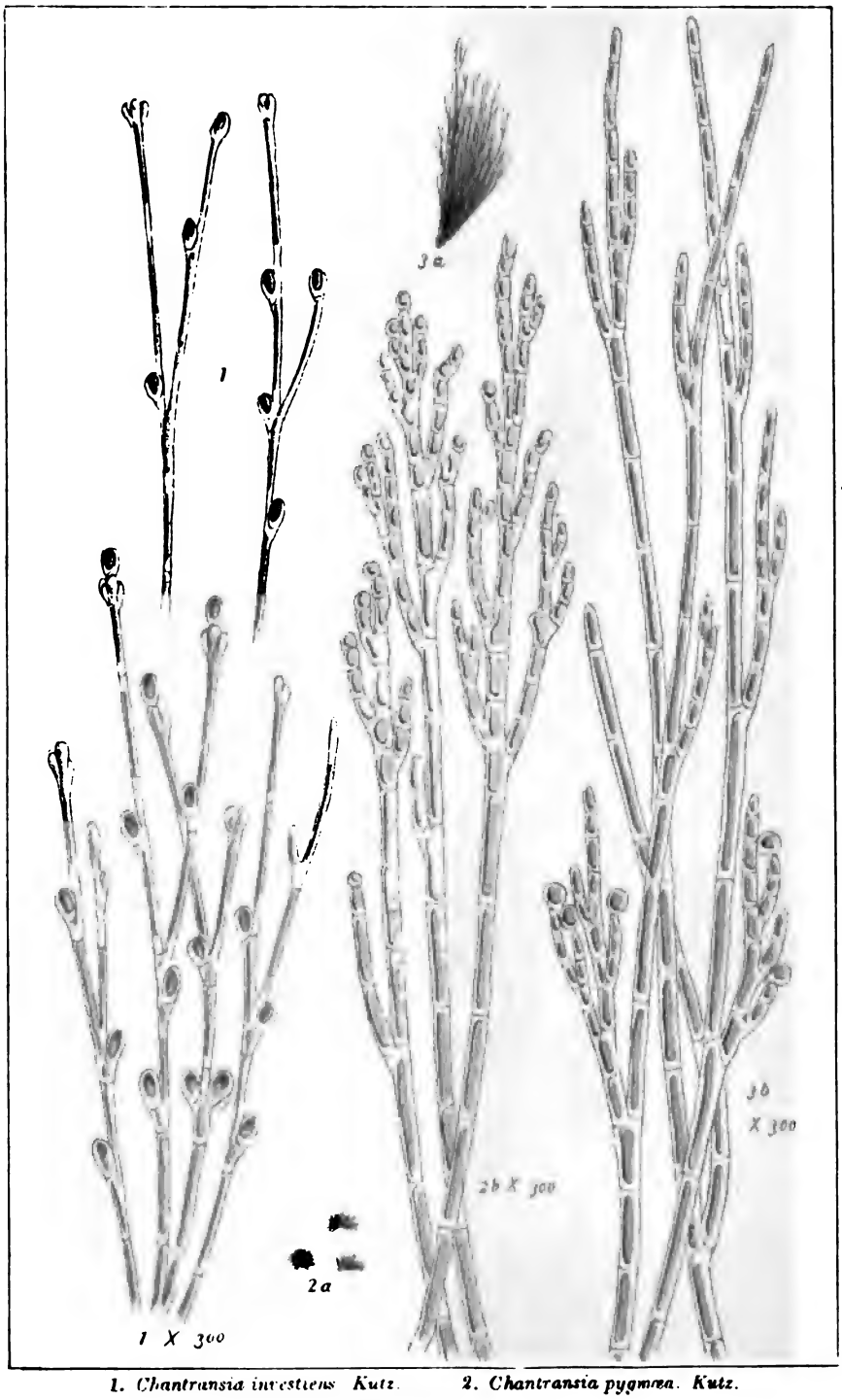
1. Glœotrichia natans. Thur. *2. Glœotrichia pisum. (Ag.)*
3. Rivularia colourea. Eng. Bot.

[redacted]



1. *Bangia atropurpurea.* (Dillw.) 2. *Chantransia scotica.* Kütz.

1. Chantransia violacea. D By *2. Chantransia Hermanni. Desv.*



1. Chantransia investiens. Kutz. 2. Chantransia pygmæa. Kutz.
3. Chantransia chalybea. Lyngb

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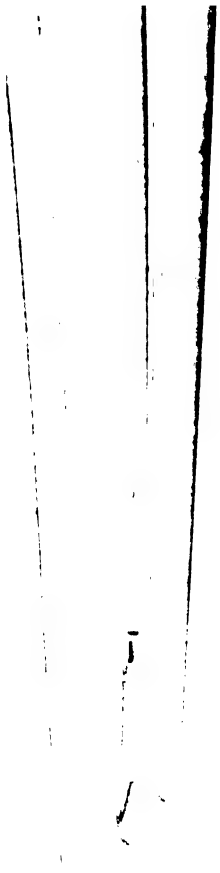
Batrachospermum moniliforme. Roth.



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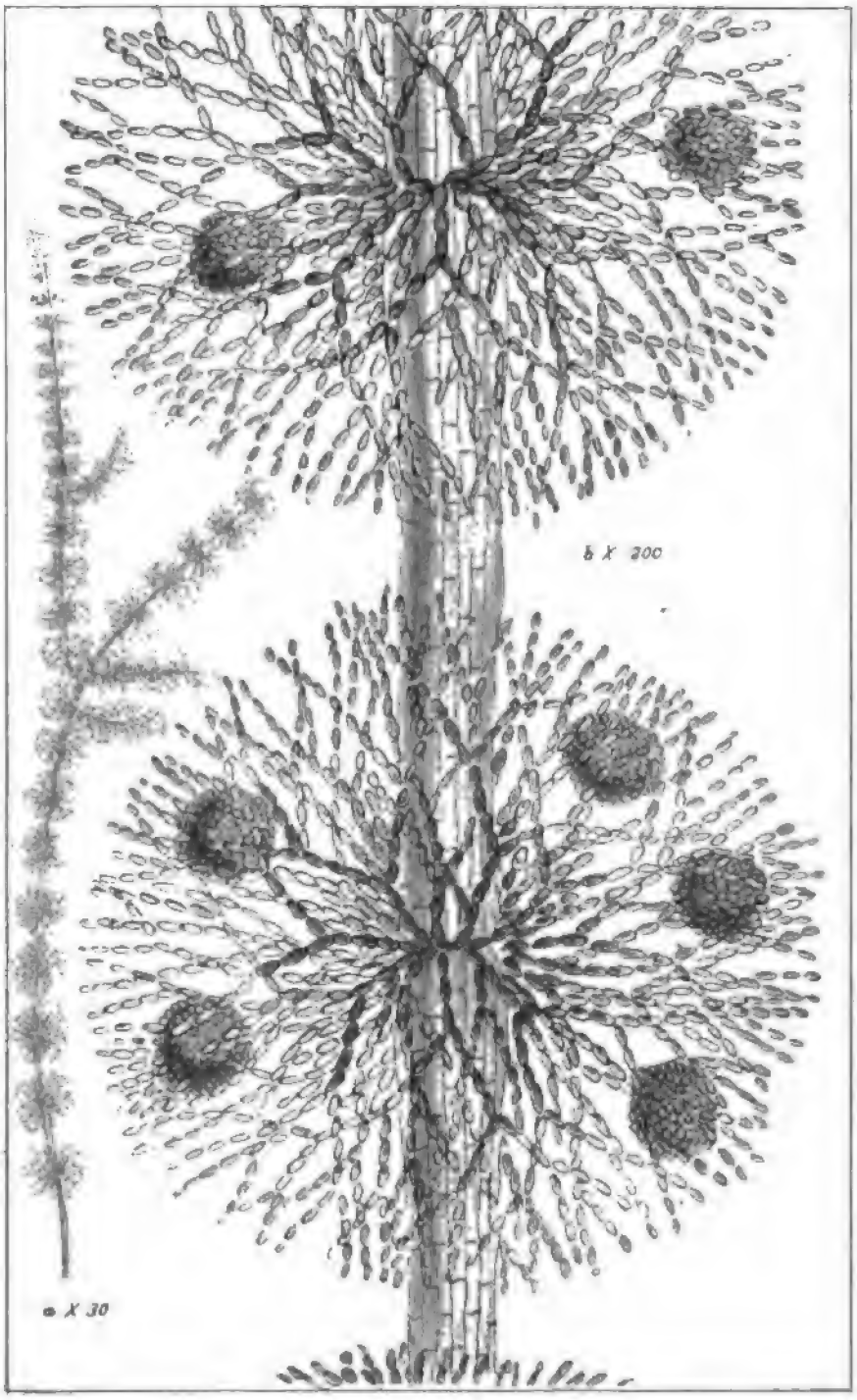
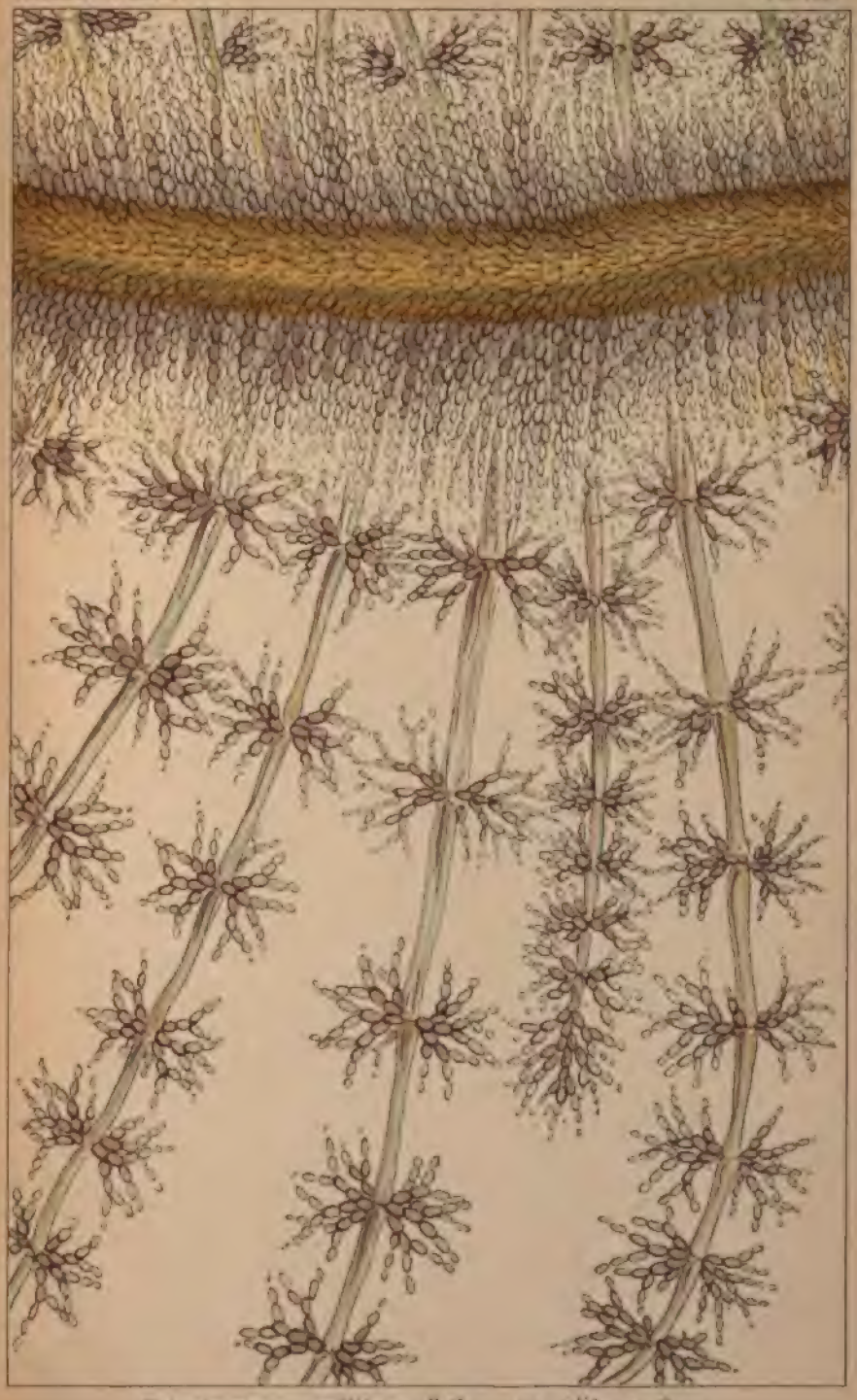
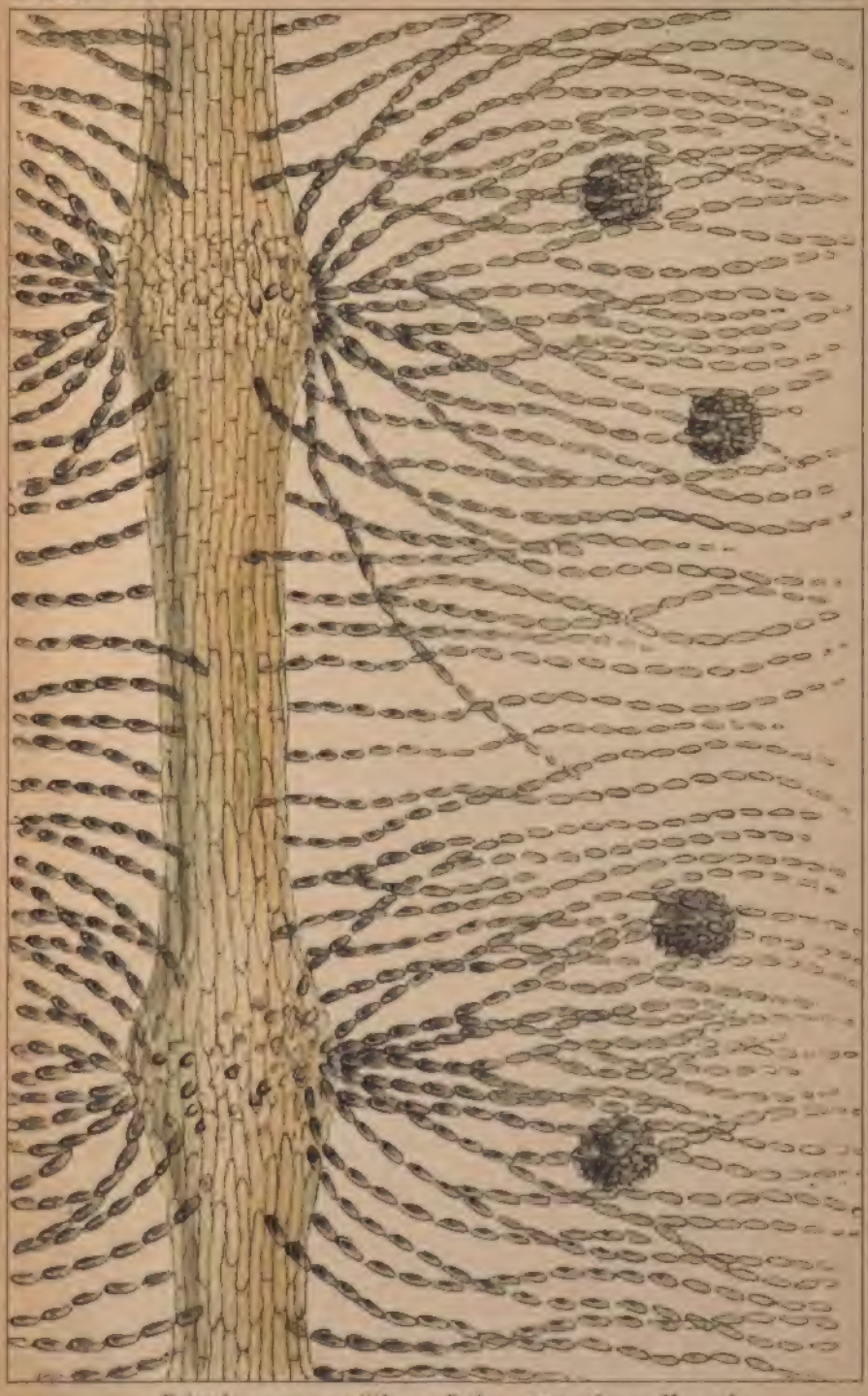


Batrachospermum moniliforme. Roth. var. pulcherrimum. Bory.

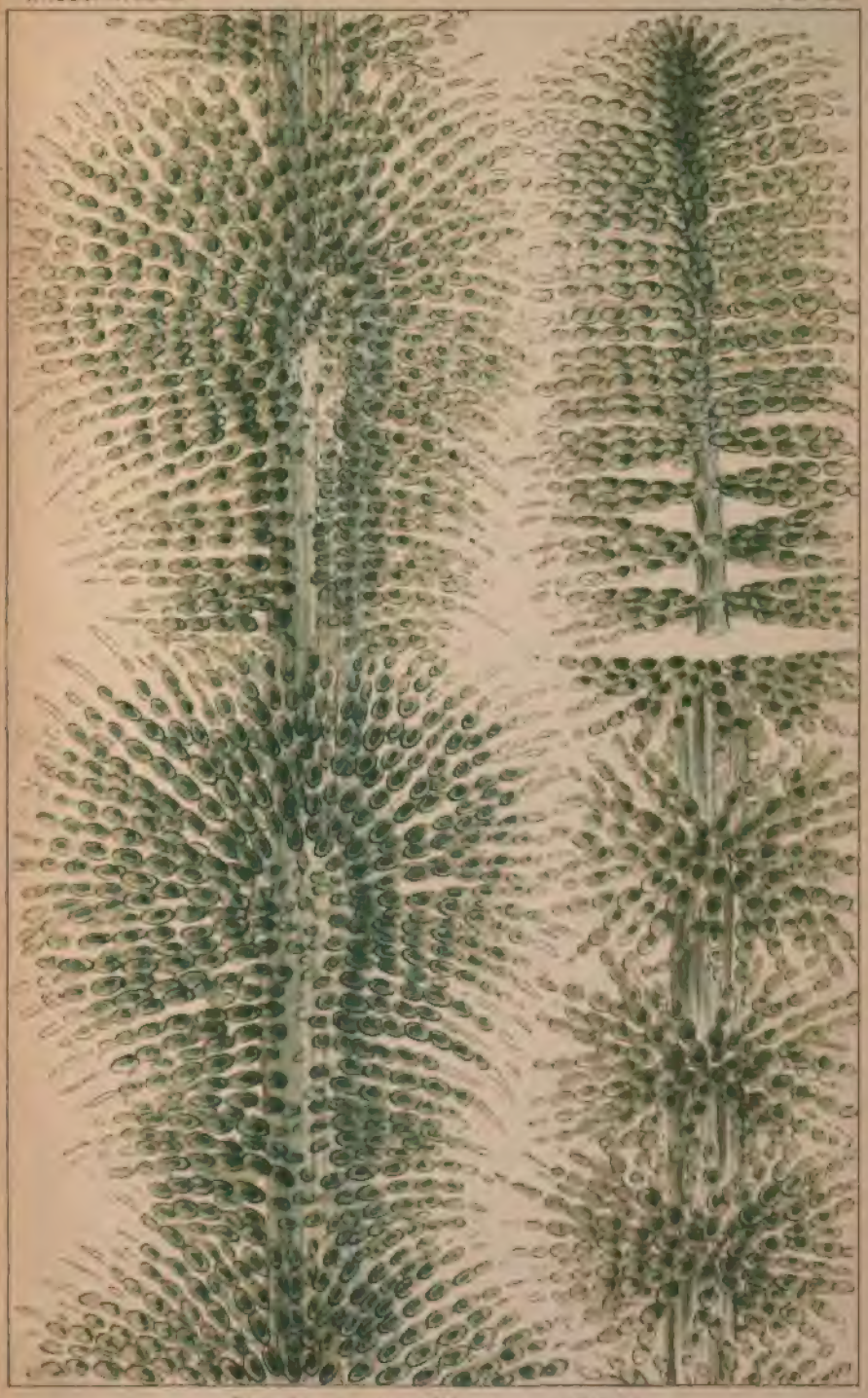
[redacted]



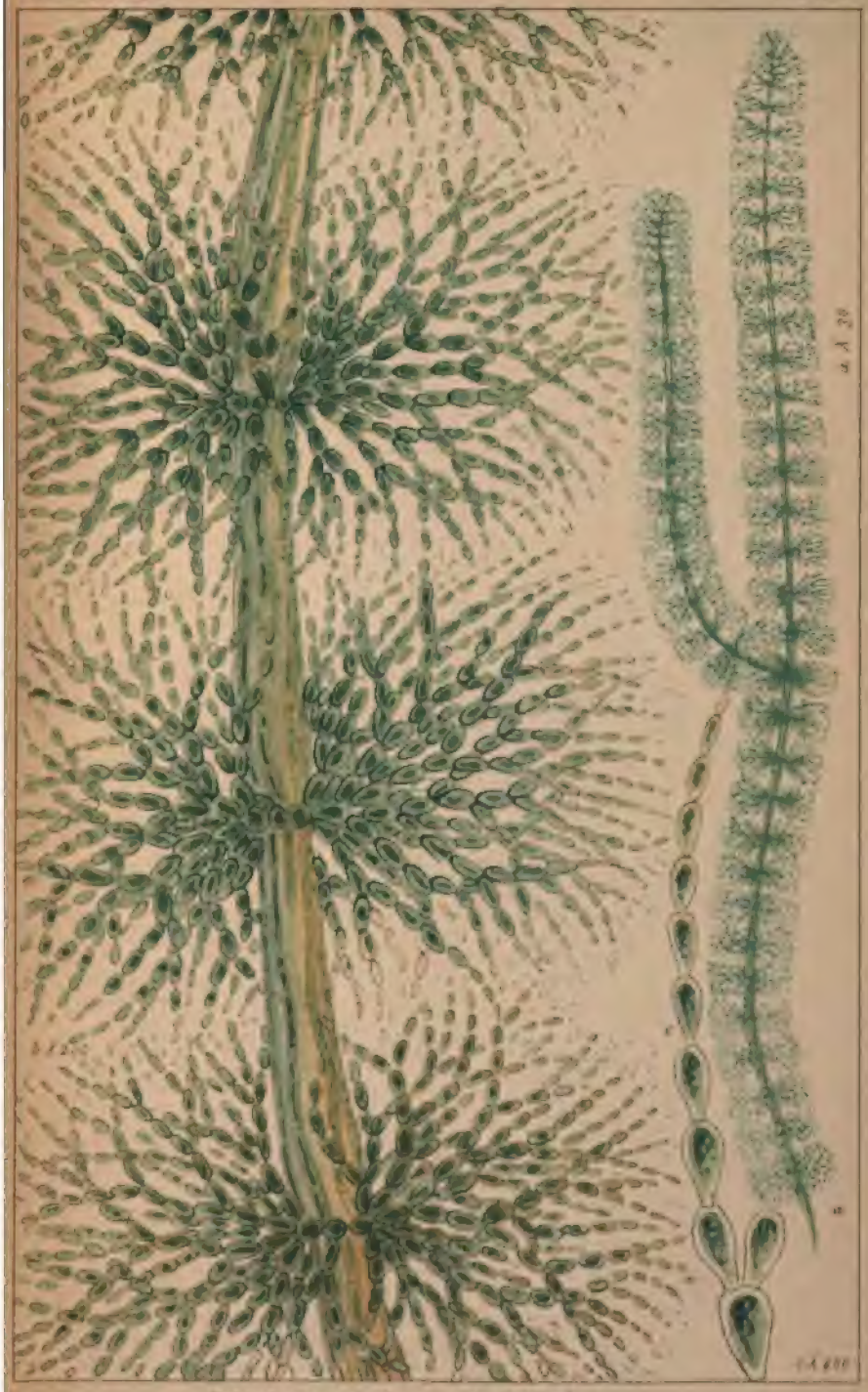
Batrachospermum moniliforme. Roth. var. proliferum. Carm.



Batrachospermum moniliforme. Roth. var. confusum. Hass.

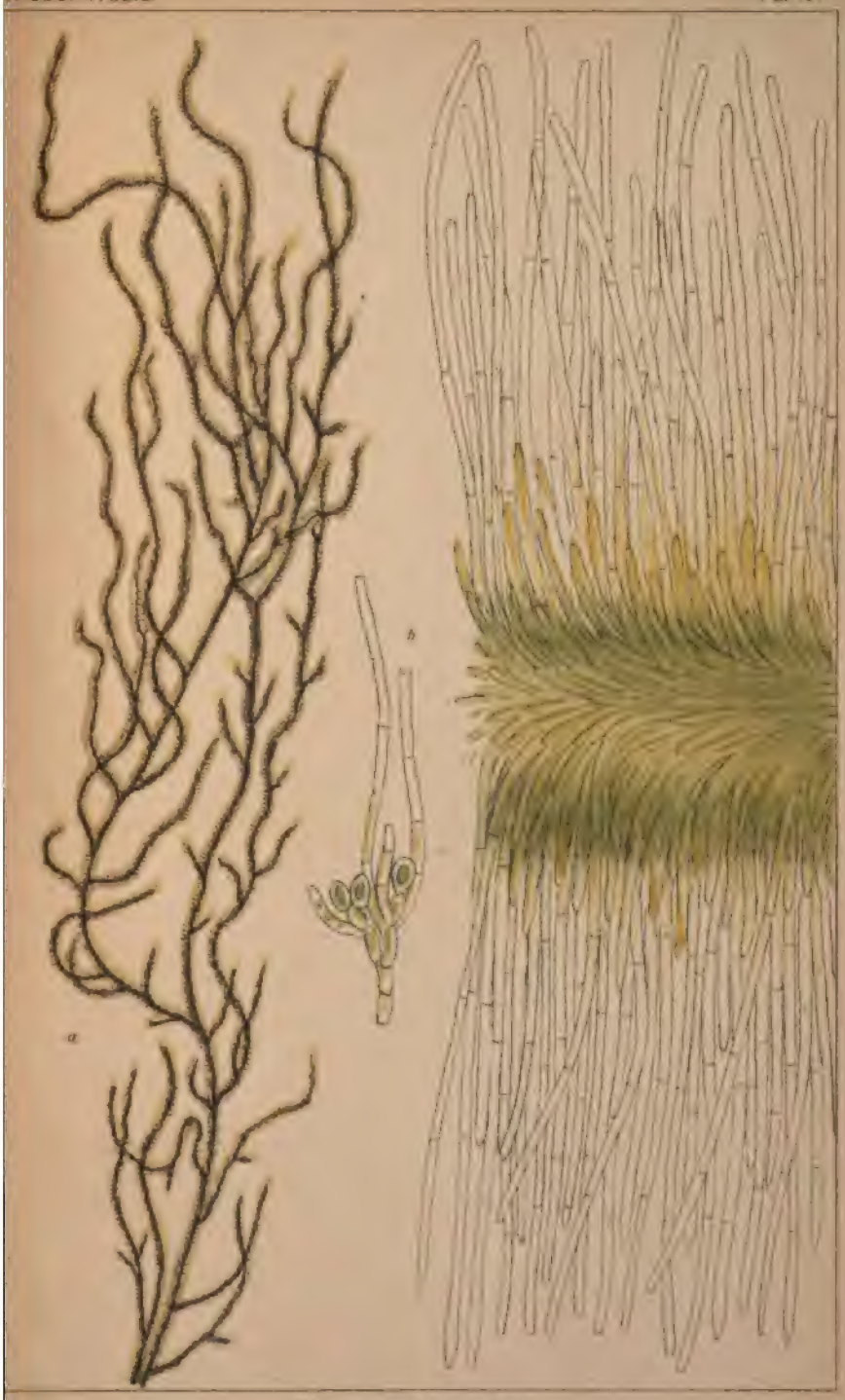


Batrachospermum moniliforme. var. *Boltoni.*

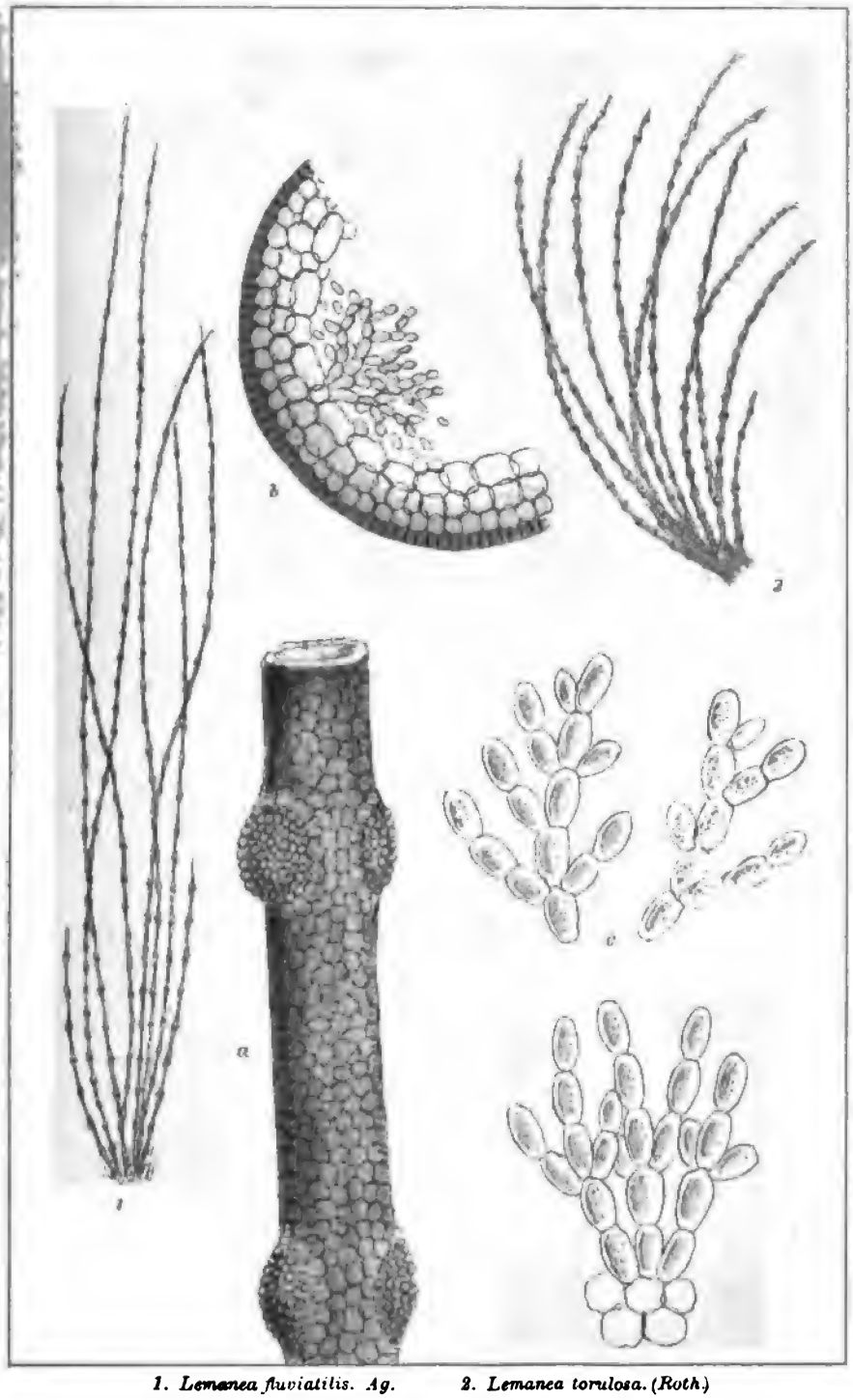


Batrachospermum vagum var. *keratophyllum*.

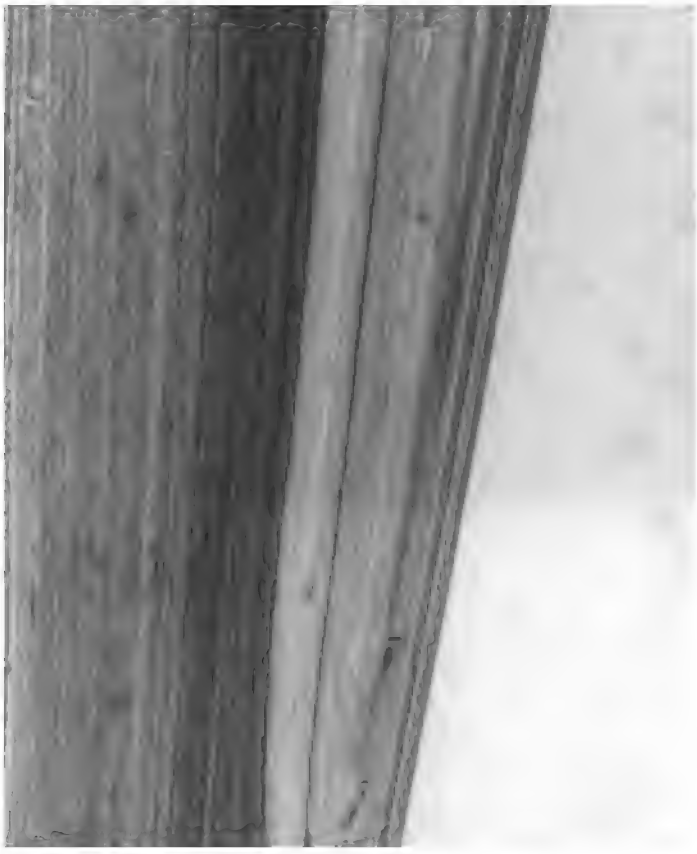
1. *Batrachospermum atrum. Harvey* 2. *Batrachospermum Dillenii. Bory.*

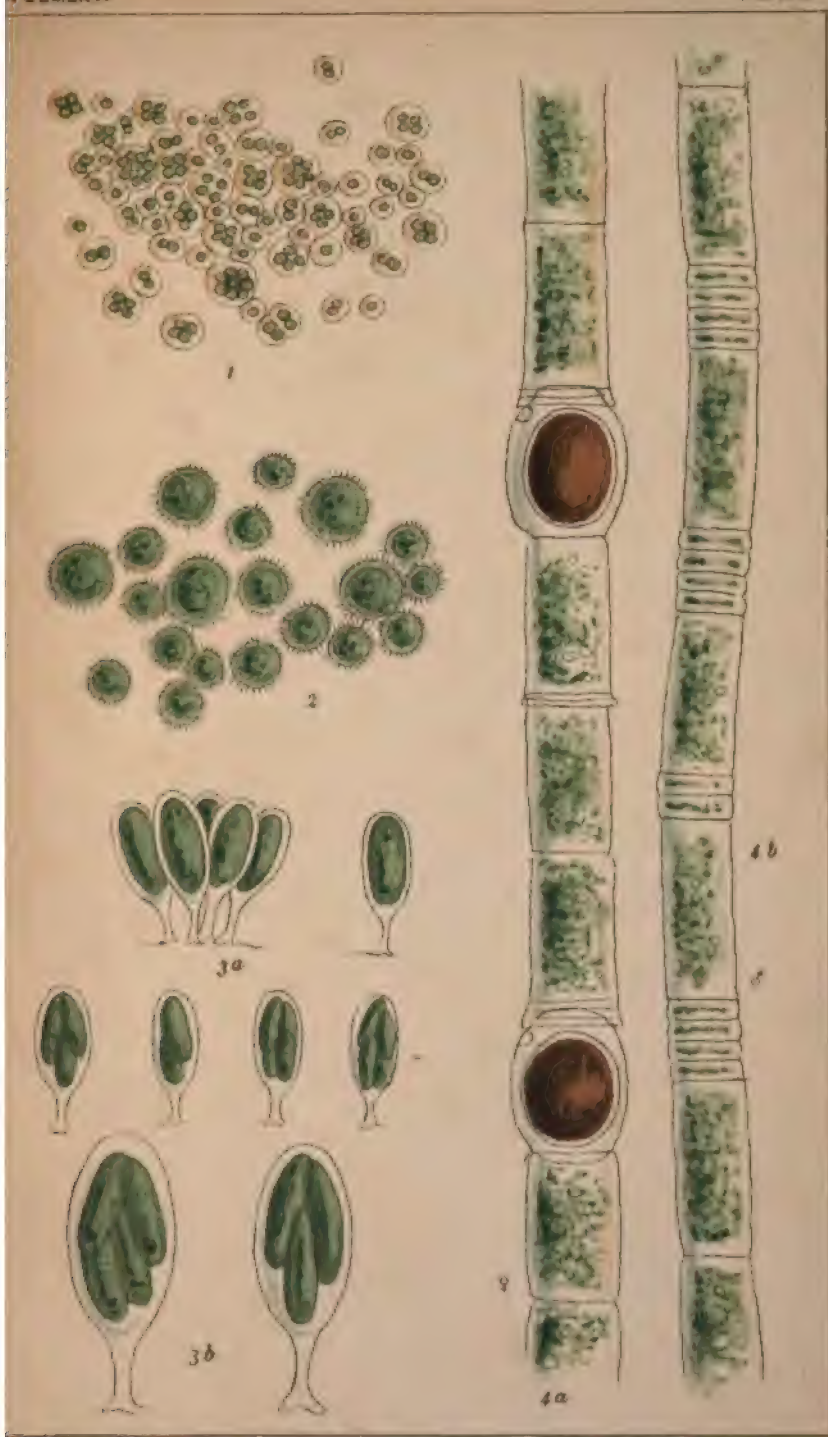


Thuretia ramosissima, Derb.

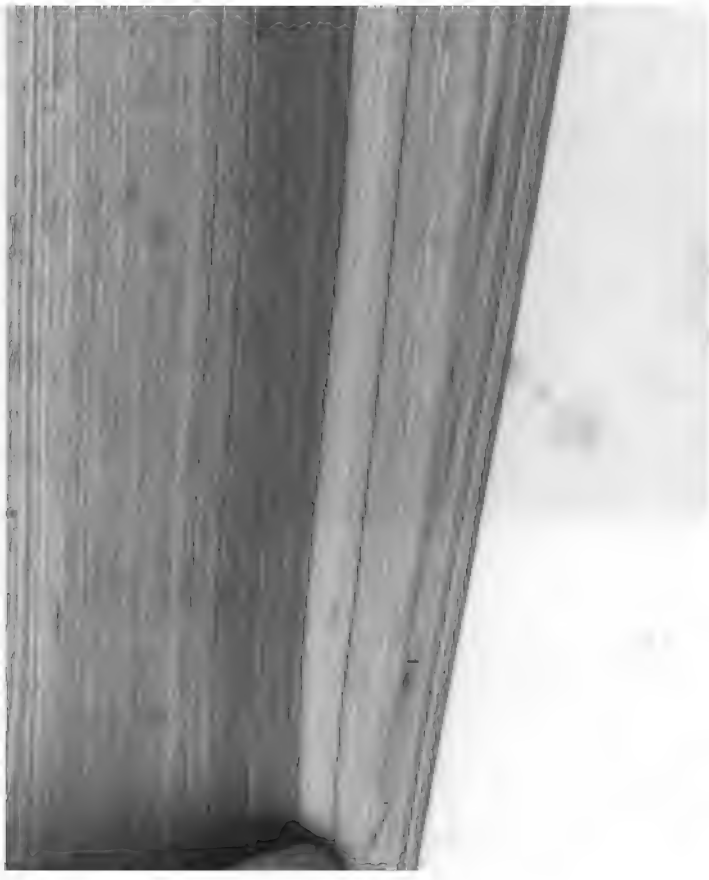


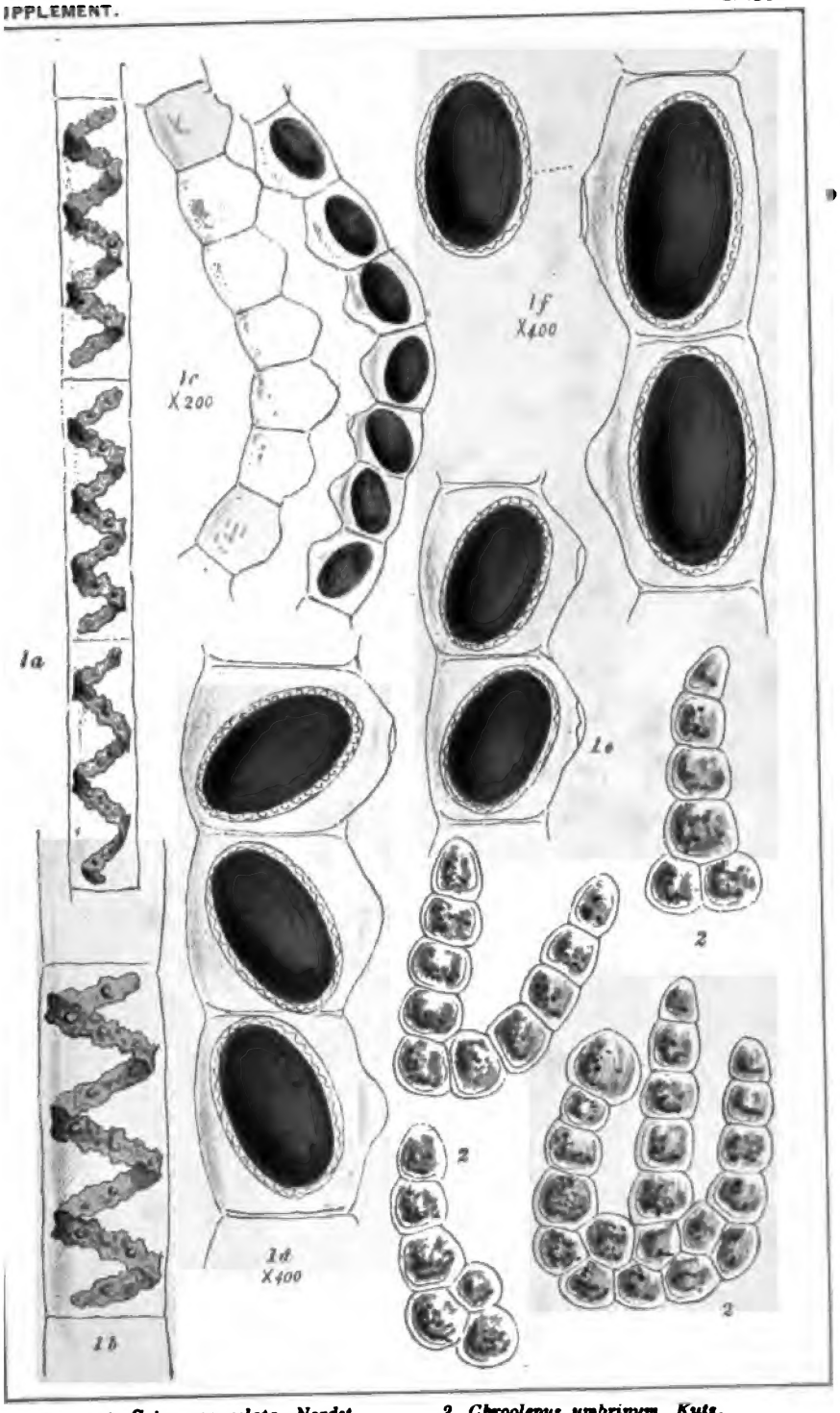
1. Lemanea fluviatilis. Ag. *2. Lemanea torulosa. (Roth.)*





1. *Pleurococcus bituminosus*, Bory. 2. *Pleurococcus vestitus*, Rein.
3. *Dactylococcus Debaryanus*, Rein. 4. *Œdogonium capilliforme*, Kütz.





1. *Spirogyra velata*, Nordst. 2. *Chroolepus umbrinum*, Kutz.